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NESTS AND EGGS

OF

INDIAN BIRDS.

BY

ALLAN HUME.

ROUGH DRAFT.

PART I.

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A HUMBLE AND HEARTFELT, HOWEVER UNWORTHY, ACKNOWLEDGMENT

OF THE

INVALUABLE SERVICES WHICH HE HAS RENDERED

TO

INDIAN ORNITHOLOGY.

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PREFACE.

In my conspectus of the Avi Fauna of India and its Dependencies, all I have to record in regard to each species is divided into sections. Section IV refers to "nidification and eggs" under two heads: (*a*) Within our limits; (*b*) Elsewhere. Of all the sections and sub-sections, none is so incomplete as IV*a*. Although I have nearly sixty correspondents in various parts of the Empire, who are all, more or less, aiding me in collecting materials for my great work, yet in regard to this particular sub-section scarcely any progress is made. Everybody whom I press to aid me in this matter insists that until they know what I have on record and where information is most specially required, they can work to no purpose. Under these circumstances, I have determined to print off separately, in this proof form Section IV*a* of the conspectus, in the hopes of thus securing more satisfactory co-operation in completing it.

This rough draft is miserably imperfect. I have not even had time to correct the press properly, but still it will serve the purpose it has in view,—*viz.*, of informing all those who are interested in the work what I already have on record and wherein I most especially require additional information.

I earnestly entreat all who can do so to send me additions and corrections at their early convenience.

I may note that the omission of any species from this compilation indicates that I have as yet been unable to obtain any authentic information as to its nidification *within* our limits.

As soon as possible after the issue of the 3rd part of this rough draft, say within a year from the publication of this latter, I propose (D. V.) to re-issue the whole, with all corrections and additions received up to that time, in a single volume.

I have only to add a hearty expression of my cordial thanks to each and all of the numerous correspondents who have furnished me with so large a portion of the information embodied in this rough draft, and whose names will be found in every case prefixed to the notes they have furnished.

"Let those now send who never sent before;
And those who *have* sent, kindly send me more."

A. O. H.

NESTS AND EGGS

OF

INDIAN BIRDS.

(ROUGH DRAFT.)

2.—*Otogyps calvus, Scop.*

The Indian King-Vulture breeds from the latter end of January to the middle of April; but, so far as my experience goes, by far the majority lay in March. In fact, as a rule, this bird hardly begins to lay until every *G. bengalensis* has hatched off.

I once found a nest with a fresh egg in November; but this was a most exceptional case. The nest I have invariably found on *trees*. It is said, Dr. Jerdon remarks, to breed on inaccessible cliffs; but at Ajmere, where, on the Taragurh hill, there are numerous suitable precipices, many of which are occupied by *Gyps indicus*, I found a pair—the only ones I met with—breeding on a large Peepul tree at the foot of the hill.

Mr. R. Thompson says: "This species is *very* common in the wilds of Central India; I have not yet known it to breed in cliffs, but have always found its nests placed on trees."

Captain Fielden says: "At Bellary, in the Dekhan, where there were no trees except in and about villages, the King-Vulture used to build on bushes from 6 to 10 feet high, a species of cactus or euphorbia, the only plant common on the dry rocks in that part of the country. It appears to me that if these birds *ever* built on rocks, it would be in so rocky and treeless a place as Bellary. I remember finding a fresh egg of one of these Vultures on New Year's eve."

As far as my own personal experience goes, the nests are always on large trees, commonly on the very top of Peepul (*Ficus religiosa*) and Banyan (*Ficus indica*) trees, at least 30 or 40 feet from the ground. Mr. W. Blewitt, however, informs me that he obtained an egg of this bird on the 20th February, from a large nest, (constructed of acacia twigs and lined with leaves and straw) placed on the top of a Keekur bush (*A. arabica*) in the Dhoona Beer, near Hansie, at a height of about 13 or 14 feet only from the ground.

Mr. W. Blewitt tells me that, besides the nest already alluded to, he found no less than seven nests of this Vulture, in the neighbourhood of Hansie, between the 6th and 24th March; each contained a single egg. Four of the eggs were quite fresh, two partly incubated, and one ready to hatch off;

those taken on the 22nd and 24th March being quite fresh. Two nests were not above 14 feet from the ground, and no nest (this is not a part of the country where trees run high) was above 25 feet from the ground. Two were on Keekur trees, two (the two low ones) on old Heens bushes (*Capparis aphylla*), and three on Peepul, Burgot, and Seeshum trees. The nests varied from 19 to 25 inches in diameter, and from 5 to 8 inches in thickness, and were all dense masses of thorny twigs of the Ber (*Zisyphus jujube*), Khyr (*Acacia catechu*), and Keekur (*Acacia arabica*). They were lined, some thickly, some thinly, with leaves or straw, and in one the egg was regularly bedded in leaves and straw. This is not altogether in accordance with my own experience; but in this, as in other cases, Mr. Blewitt sent me all the eggs, and more than one of the parent birds, and there can be no doubt as to the accuracy of his observations. The same gentleman took a fresh egg of this species, as late as April 13th, 1868. The nest was placed upon a Peepul tree, at the height of about 30 feet from the ground, measured about 16 inches in diameter by 6 inches in depth, and was composed of Keekur twigs, lined with fine straw and a few leaves. This was also in the Hansie district.

I have never found two pairs breeding near each other. The tree they commonly select is one standing altogether apart, in the middle of some Dhak (*Butea frondosa*) jungle, or waste place; but I have taken their eggs from trees belonging to groups situated in cultivated land, and on the 1st March 1867, I found a nest (from which I shot the female and took the egg) on a Peepul tree, situated right in the centre of the village of Deopoora, zillah Mynpooree.

The nest is a huge flat platform, more often oval or oblong than circular, chiefly composed of sticks, varying from 1 inch to ½ inch in diameter, loosely put together, but still, from their aggregate weight and the manner in which they interlace, forming a very solid structure. They always have a lining towards the centre, often of numerous strips, from 6 to 10 inches long and from 1 to 3 broad, of the fan leaves of the Toddy palm (*Borassus flabelliformis*), but not uncommonly of Peepul, Banyan or Neem (*Melia azadirachta*) leaves, or of slender twigs of these trees to which the leaves are attached.

The nest varies from 2½ to 4 feet in length and breadth, and is often more than a foot in thickness. Though I have no positive proof of it, native hunters assure me that, when not molested, they breed year after year during long periods in the same nest; and the materials of one nest that I demolished weighed over 8 Indian maunds (over 6 cwt.), and proved to have at least three distinct layers and to have been used many times. As, however, *I know* that this bird sometimes, like *Ketupa ceylonensis*, (*vide infra*) takes possession of old nests of *Haliæëtus leucoryphus*, of which bird there were several pairs in the neighbourhood, I cannot be certain that these Vultures had really, as the nest seemed to indicate and the villagers declared, bred in this same nest during many successive seasons.

They lay a single egg. I have heard it asserted that they sometimes lay two, and this is quite possible; but of the numbers of nests that I have personally examined, I never found one that contained more than a single egg or a single young one; and in Upper India, I feel quite sure that *one* is the normal number.

The eggs, when first laid, are usually a nearly unsullied, pale, greenish white; but as incubation proceeds they become greatly stained and discolored by the droppings of the parent bird. I have taken only one egg at all marked, and this showed numerous *very faint* dingy-purplish streaks and spots, but possibly higher coloured examples may occur.

In shape, the eggs vary from rather long ovals to nearly spheres; but the normal type I consider to be a round oval.

The texture is moderately fine; the shell *very* strong, and as a rule glossless: but I have found eggs with a faint gloss.

The egg-lining is green.

The eggs vary in size, from 3·2 to 3·5 inches in length, and from 2·45 to 2·8 inches in breadth. Of 24 eggs measured, the *average* dimensions were 3·34 by 2·6 inches.

3.—*Gyps himalayensis, Hume.*

The Roc, as I have called our largest Himalayan Vulture, (long confounded with *G. fulvus*, Gmel.—of Europe and Africa—the well-known Griffon)—lays during the last week in December, the whole of January and February, and the first week in March. As a rule, however, by the end of February the nests contain young, huge, gosling-looking creatures, thickly clad in long dingy yellow down.

The nest, where there is one, is ordinarily a huge platform of sticks, (at times the property, in past years, of some eagle or falcon, which the early nesting vultures have seized upon long before the rightful owners have even begun to think of their annual matrimonial duties) placed, I believe invariably, on a rocky ledge of some bold precipice in the Himalayas, at least 3,000 feet above the sea. At times the whole nest consists of a few twigs or roots, or a little grass, and occasionally the egg reposes on the bare ground. I have never yet heard of their nesting on trees. Though generally gregarious in their breeding habits, large numbers rarely appear to breed together. Six is the greatest number of nests I have yet known of in one single locality. In this respect, they differ from *G. indicus*, of which usually from 10 to 30 pairs breed close alongside each other.

West of Nepal they breed in suitable localities all over the Himalayas, Mr. R. Thompson mentions having seen their nests in the neighbourhood of Nynee Tal. From near Chakrata, an egg has recently been sent to me. My dear friend, Captain G. F. L. Marshall, nearly lost his life examining a breeding haunt near Kussowlee. I have seen their nests in many places in the interior, in Gurhwal, Teree, Bussahir, and Kooloo, and I have had the eggs taken behind Mahasoo, and near Narkunda. Long ago, Captain Cock, who has probably taken more eggs of this species than any one living, wrote to me as follows:—

"In April 1867, I was at a pic-nic in the Kumara slate quarries (near Dhurmsala), and there noticed a nest of *Gyps fulvus*; the old bird was sitting at the time; the nest was a mass of sticks and dirt, placed on a shelf of rock under an overhanging precipice. Some idea of the magnitude of the precipice I can give you. When standing at the foot I could not nearly fling a stone up to where the nest was, and yet it was more than half-way down from the top. I got long ropes and hill-men, and a venturous plains-man! (hill-men would not look at it) went over. After dangling in mid-air for some time, he contrived to get hold of a creeper with his toes, and by means of that pulled himself on to the ledge; then creeping along the ledge, he got to the nest, and went quite close to it; the Vulture at last flew off, leaving a young one covered with dingy yellow down, and looking like a huge gosling. I left the young one, and took measures for securing the eggs in 1868. On the 25th February, I went out and saw that this year there were two nests on the ledge. I then, on the 28th February, got long ropes reaching from the top of the precipice to the bottom, and with the aid of a long bamboo, with a bag at the end, we fished the eggs out of the nests; a man having been pulled up from below for that purpose. There was only one egg in each nest." Captain Cock found the birds breeding earlier in 1869 than in the previous year. On the 20th February he found four nests, one had an egg, in the other three the old birds were sitting close. Next day, taking ropes and men, he visited the nests. In No. 1, the egg had hatched off, No. 2 contained a young one of some five or six days old, and No. 4, one fully a week old. No. 3 alone contained an egg, and that even would have hatched off probably in another day, and contained a live fully-formed chick.

Later, Captain Cock sent me the following further note on the nidification of this species:—

"I find that the nests of this bird vary much in their character, some being large masses of sticks, others only a few roots and grass; and, again, the egg is sometimes laid on the dust of some dry, well-sheltered ledge. In all cases there is a shelter for the young by some overhanging ledge. The nests are occasionally close to each other, but very seldom; yet many pairs will be found breeding in one nullah on the steep precipices on either side. The old bird sits very close indeed: on one occasion, it was not till I put out my foot towards the old bird that she got off her egg, and then she did not take wing, but only moved some 3 yards further up, and on my turning round to go back, she immediately returned and sat on the spot where her egg had been placed. I fancy that this bird is the most powerful of all the Vultures. A nest that I was watching, belonging to *Gypaëtus barbatus*, was taken possession of by a pair of *G. himalayensis*; they commenced throwing out the wool that had been placed in the nest, and for some days one Vulture at least might always be seen on the nest, and occasionally both. I often saw the Lammergeyers try and effect a lodgment on the nest, but the Vulture on sentry had only to come to the front to drive the Lammergeyer off. This pair of birds were both young birds. I have observed the old and young birds pairing together. In one case, the female was quite a young bird with the stripey brown breast, while the male was the palest of his tribe. The variation in the color of this bird is considerable, and I do not think they attain their natural pale color till they are four or five years old. I have not noticed that the coloration of their eggs is influenced in anywise by the age of the parent, as a particularly large grey pair laid a very small egg with the faintest of rusty spots at the larger end. The old and young bird just mentioned laid a large white egg."

The bird lays a single egg; as indeed *all* true Vultures here invariably seem to do.

The eggs of this species are larger than those of any of our other Indian Vultures.

In shape they vary a great deal, as indeed do those of all the Vultures, but they seem to be normally rather long and pointed ovals.

The texture of the shell appears coarser than that of the eggs of either *indicus*, *fulvescens*, *bengalensis*, or *calvus*. The ground colour is the usual greenish or greyish white of all the true Vultures.

Some are entirely devoid of markings, but fully two-thirds are more or less blotched or streaked with brighter or duller shades of red brown, or with pale brown or olive brown. Perhaps one in ten are blotched all over, and two in ten have a considerable amount of markings, confluent at one or other end.

In size they vary from 3·58 to 4·08 inches in length, and from 2·38 to 3·1 inches in breadth. The average of 25 eggs measured by myself and Captain Cock is 3·76 by 2·75 inches.

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3 *bis.—Gyps fulvescens, Hume.*

The Bay Vulture, in the distinctness of which from the European Griffon Mr. Gurney in a recent letter to me expresses himself disposed to concur, breeds, doubtless, all over the dryer and more desert portions of Sindh, Rajpootana, the Punjab, the North-West and Central Provinces.

Of its nidification I can say little. Mr. R. Thompson informs me that on the Satpoora range of the Central Provinces, it breeds in January and February, building a large platform stick nest on the lofty Sâl trees that there abound. So far as my own experience goes, it breeds in February and the first-half of March. Its nest, a huge platform of sticks, was placed, in the only three instances which I know of, near the top of very large Peepul '*Ficus religiosa*) trees. Both nests that I found were solitary, as was that found by Captain C. H. T. Marshall. The nests are between 2·5 and 3 feet in diameter, some 6 to 10 inches in depth, constructed of sticks and twigs, and without any lining. The nests that I found on the 12th and 21st March contained a single young bird each. It is to Captain C. Marshall that I owe the only egg I possess. He says: "The nest was found on the 14th March on the top of a large Peepul tree, (some 40 feet from the ground,) in the Shahbaloul gardens near Lahore. It contained a single egg nearly ready to hatch off, the bill of the young one being actually protruding."

The egg is a very perfect oval, a good deal larger than that of *calvus* or *bengalensis*, and the texture appears to be finer than that of the eggs of any of our other Indian Vultures. No positive conclusion, however, can be arrived at from the examination of a single egg.

The egg is of the usual Vulturine type, pale bluish white, but with a faint gloss; it is altogether unspotted, but was extensively soiled and discolored from the droppings of the parent bird. It measures 3·5 by 2·8 inches.

4.—*Gyps indicus, Scop.*

It is only doubtfully that I retain Scopoli's name for the species, the nidification of which is below described. Under the head of the Long-billed Vulture have, I believe, been confounded two different species, the one the darker bird of the Sub-Himalayas and Bengal, which breeds on trees, the other the much paler bird of Western and Central India, which always breeds on cliffs. Mr. R. Thompson, a close observer, confirms this view. He says:—

"I am quite certain the *indicus* as found in Central India, breeding on the cliffs of the Puchmurrees, is a different bird to that one I know in the

Sub-Himalayas Cis-Indus, and which, *without exception,* breeds in trees. This last is a smaller and darker bird, with a distinctly blue head and neck. Though fine cliffs occur in the Sewaliks and the outer ranges of the Himalayas, I have *never yet* seen its nest in them, but on the contrary have found the nest in trees close to, and almost underneath, some fine ledges, which might have served them instead, if their habits tended that way. I feel sure we have in this bird an undescribed Vulture, and I shall endeavour to secure specimens and eggs, and forward them."

Now this darker and smaller bird is clearly *tenuiceps* of Hodgson, and if it is, as seems likely, (for it is the species found in Lower Bengal,) *indicus* of Scopoli, then the species to which I now refer, and which is fully described at p. 22 *et seq.* of my "Rough Notes," must stand apparently under my name, "*pallescens,*" the Pallid Vulture.

Our present species breeds in the latter part of December, January, and possibly the early part of February; by the end of March every egg has been hatched off. It always selects, as far as my experience goes, nearly inaccessible and precipitous cliffs to breed on; but as I have only yet found it breeding in two places, *viz.*, at the Taragurh Hill near Ajmere, and the Gaimookh cliffs on Mount Aboo, I cannot speak positively. Jerdon, however, mentions that the present species breeds on " some of the cliffs bounding the valley, in which are situated the celebrated caves of Ajunta," and Mr. R. Thompson found their nests on the cliffs of the Puchmurrees.

The breeding places of this species (they appear always to breed in society) are often very picturesquely situated. The Taragurh Hill, which overlooks and almost overhangs the city of Ajmere and the beautiful Ana Sagur Lake, may be about 2,900 feet above the level of the sea. On precipitous faces of this hill, specially where succeeding overlapping ledges make the place as nearly inaccessible as may be, colonies of this Vulture breed. One of these breeding-haunts, which I minutely examined, was a cliff face some 100 feet high by 300 wide, all broken up into irregular ledges, of which the highest overhung all the rest. In amongst the ledges were a few dwarf Banyan trees, whose long bare roots and rootlets hung down, here and there, in dense, grey, giant skeins; all the ledges but the uppermost, when looked at from below, seemed garnished with heavy white fringes, the white droppings of the birds having run down in close parallel lines in a wonderfully symmetrical fashion over the weather-smoothed edges of the terraces. Seen from a distance, the whole cliff-face seemed mottled with huge patches of white-wash. Bleached bones and dusky quills strewed every little plateau, and nestled in every cranny. It was on the 30th of March 1867 that I laid siege to this natural fortress. With the assistance of two sporting Mahomedan faqeers—two of the best cragsmen I ever saw—I crept, having duly removed my boots, to the lowest ledge, a work of extreme difficulty, owing to the excessive slipperiness of the white-crusted rocks. To my intense disgust, a little apart from the nest, on the bare stone, sat a huge unwieldy mass of yellow fluffy down, opening a vast mouth and cackling and hissing at me in the most hostile manner. The unfortunate little wretch was too fat and heavy to stand firmly on its stumpy legs, and could only stand up for a second, stagger a few inches, and then plump down exhausted. It was about 10 A. M., and all the old ones were away procuring food, and during the two hours we remained about the rocks, only one of them at all closely approached the place, although before we left, the whole community—I should say nearly sixty in number—had collected in the valley, (in one side of which the cliff was situated,) and kept wheeling and circling round above their homes, but at a distance of fully ¼ mile.

We left the dingy little tenant of the first nest in peace, and slowly and painfully made our way to one after another of the nest-filled ledges. Everywhere we found the nests empty; but in the case of about half the number, a more or less advanced young one of from a week to more than a month old was squatting on the bare rock a few feet from the nest. Those nests near which no young one was seen had obviously not been tenanted. At the time I fancied that these belonged to birds that had not yet laid, but I had the place closely watched for nearly a month without any one of them being used, so that I presume that the birds often find their first nest unsuitable in some way and construct a second, in which to incubate their egg.

The nest placed on some ledge of the cliff's face consists only of coarse sticks and twigs. When the eggs are first laid, there may be some lining of leaves, as in those of many other kinds of Vultures and Eagles; but when I visited the place, the young were all hatched, and the nest so coated with their droppings, that it was impossible to trace any lining. The nest is nothing more than a thin, flat, irregularly circular pad of sticks, from 2 to 3 feet in diameter, and from 3 to 6 inches in depth.

As a rule, they only lay a single egg. Of all the fifty odd nests to which I made my way, not one contained more than a single young one.

Captain Repton, Deputy Commissioner of Ajmere, very kindly secured for me a noble series of eggs from these very nests, ten months after I had visited them. The egg's normal type is a very long oval. Taken as a body, they are very much larger than those of *calvus* or *bengalensis*, and their texture is, if anything, somewhat finer than that of either of these two species; as a rule, they are of an unspotted, very pale greyish or greenish white: but some are thinly spotted and blotched with pale reddish brown, or in some cases faint purplish brown. One only that I possess is *richly* blotched and mottled, chiefly, however, towards the smaller end, with somewhat pale brownish and purplish red, about equally intermingled; this is the handsomest Vulture's egg I have yet seen. They vary in length from 3·48 to 3·9 inches, and in breadth from 2·62 to 2·85 inches. The average dimensions of twenty-one eggs were 3·61 by 2·72 inches.

5.—*Gyps bengalensis, Lath.*

The Indian White-backed Vulture breeds from the latter end of October to the early part of March, but the majority, I think, lay during the month of January. The nest, as far as my personal experience goes (and I have seen many hundreds), is always placed upon trees, even where convenient cliffs and precipices are close at hand. Banyan and Peepul are their favourite trees, I think; but I have found them breeding on the Neem, Tamarind, Arjun (*Terminolia arjuna*), and others: in every case, however, on *large* trees. As a rule, they prefer to nest near each other, in the outskirts of some populous town, like Binderabund for instance, where ancient groves with suitable trees abound. I have seen as many as fifteen nests on one single Peepul tree, and as many as a hundred on a group of trees lying within a circle of 200 or 300 yards in diameter. It is not, however, uncommom to find a solitary nest, high up on some huge Peepul tree, standing isolated in the midst of cultivated land or scanty jungle; but I have an idea that these are always the nests of young birds, and that while the clustered nests are tenanted by the same species year after year (in one case that I know of, for certainly the last fifty years), these solitary nests are rarely, if ever, re-occupied by this Vulture, who, after the first year, abandons them to other tenants. On two occasions I have found nests of this bird that I had robbed one year, occupied the next by the Grey Eagle-owl (*Ascalaphia coromanda*), and once I found a lordly King-Vulture in possession of its plebeian brother's former residence.

The nest is a large irregular platform of sticks, sometimes quite at the top of the tree, often wedged in a fork, averaging probably nearly 3 feet in diameter and 6 inches in thickness, but often far exceeding this latter dimension, especially where a deep fork has to be filled in. Not far from Puhpoondh, I made a man measure one in my presence, which was an irregular cone (the apex downwards), by pushing an iron ramrod through it, and found the depth to be 22 inches! The materials of the nest appear to be heaped on at random, but in reality they are so carefully overlaid, that it is very difficult to pull out one of the sticks that compose the nest without pulling the whole fabrics to pieces. The shape of the nest depends upon the locality, and is more generally oblong or oval than truly circular. There is only a slight depression, as a rule, towards the centre of the nest; but I found one nest near Hodul, which was a regular deep cup, in which I really think a moderate-sized sheep might have been stowed away. They always line the centre of the nest more or less with leaves, and the Peepul seems their favourite. These leaves are green and fresh when the egg is first laid, and before you blow it, you can pretty well guess how long the egg has lain in the nest by the condition of the lining leaves.

Mr. A. Anderson remarks, that it "builds exclusively on trees, and seems to have a decided partiality for the Burgot and Peepul (*Ficus indica and F. religiosa*). It is the earliest breeder amongst our Indian Raptores. Several eggs were collected near Futtegurh as early as the 15th of October last year; and though I added considerably to the numbers in the following month, they were all, with one exception, without any spots. Later in the season, I got an egg almost completely capped at the small end with rich purple-red, but unfortunately it contained a live chick. A curious trait in the habits of this species, *viz.*, that of breaking off green twigs with its beak for a nest lining, does not appear to have been recorded before."

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—"Lay in the first and second weeks of March; eggs, one only; shape, ovato pyriform; size, 3·36 by 2·62 inches; color, dull white: nest, of sticks and twigs, in large trees."

I shot a fine male off a nest on the 8th March, thus proving that the males participate in the labour of incubation. The female in this case did not return for some hours; and when she did, she was apparently so enraged at finding her egg (which was much incubated) gone, and her husband missing, that she tore the upper part of the nest to pieces, scattering the sticks and leaf lining here and there, and making a wonderful snorting and hissing all the while. This is not the only instance I have witnessed of birds tearing their own nests to pieces in anger at the loss of their eggs—(*Vide Grus antigone*, No. 833, and for a somewhat similar incident, *Falco jugger*, No. 11).

They lay normally a single egg. That two eggs *may* have been found in one nest, I will not take upon myself to deny; but I have before me now notes of eighty odd nests, and besides these, I have had many others examined, of which I took no note at the time, and yet I never met with more than a single egg or a single young one *in any* nest. In color, the eggs when fresh are dull white, with an excessively pale bluish green tinge. As a rule, they are unmarked; but at times they are a good deal tinged and speckled, or even blotched with darker or lighter shades of reddish brown, most usually I think chiefly towards the large end. The eggs of this species vary to an amazing extent: whether, in reality, these eggs vary more than those of the other Vultures, or whether it is that the large series of over a hundred eggs, which I have myself collected, makes the variations more conspicuous, I cannot say; but the fact remains that I have the eggs of my own taking, of almost (for such a bird) every conceivable size and shape. The cubic contents of one egg (the largest)is certainly two and half times that of the smallest. One is a perfect pear, another so long an oval as to be almost cylindrical, and one or two are almost spherical; the normal type, however, appears to be a somewhat broad oval, slightly compressed or pointed towards one end. As a body, they are more oval and less round than those of *calvus*, while they are rounder and less oval than those of *indicus*. As above remarked, the majority, though often much soiled and discolored as incubation proceeds, are of the usual pale greyish or greenish white color, and unspotted; but a certain number, perhaps about 1 in 5, are more or less speckled, spotted and blotched, always chiefly towards one end, with pale reddish brown. One egg only, out of more than a hundred that I have, is richly and extensively blotched and clouded, in fact almost capped at the large end with reddish and purplish brown. So discoloured do the eggs sometimes become before they are hatched, that I have one egg, an addled one, stained throughout an almost uniform earth-brown. The texture varies a good deal, but is generally moderately fine; a few exhibit a slight gloss, but mostly they are glossless.

The shell is very thick and strong, and, like that of most other large birds' eggs (especially those of Cranes and Game birds), often has pimply lumps and crease-like folds at the small end. Held up against the light, the shell appears to be a rich green. The eggs measure from 3·05 to 3·85 inches in length, and from 2·25 to 2·8 inches in breadth; but of sixty-eight eggs measured, 3·26 by 2·42 inches are the average dimensions.

6.—*Neophron ginginianus, Daud.*

The White Scavenger Vulture, or Dirt bird, (I refer to our Indian birds, which I am as yet by no means certain are distinct from Pharaoh's Chicken of Egypt, *N. percnopterus, Lin.*) breeds from the latter end of February to the end of April; but the majority, I think, lay towards the end of March. They nest indifferently, it appears to me, on rocky precipices, earthen cliffs, parapets or cornices of buildings, and large trees. I have often found the nests on ledges of the clay cliffs of the Jumna, close to nests containing the young of Bonelli's Eagle, or the Jugger Falcon. At Etawah, a pair yearly build on the church tower, at the base of the steeple. One pair always breed on the portico of the Metcalfe Hall at Agra. On the rocky headland, known as the *Mata Pahar*, which juts out from the southern shore of the Sambhur Lake, whose blue waters it overlooks, I found a nest in a cleft of the rock, from which I was able to take the eggs without leaving the pathway; and within 2 feet of the head of the sitting bird was a nest containing three eggs of *Ptyonoprogne concolor*. They are far from seeking retirement. They build commonly in trees in the suburbs of towns, Neem, Tamarind, Peepul, and Burgot, alike furnishing them with homesteads; and for several years I noticed a pair building on a comparatively small tree, in the centre of the busy grain market at Etawah.

The nests are clumsy, ragged, stick structures; platforms slightly depressed towards the centre, loosely put together and lined with any soft substance they can most readily meet with. Old rags are a great stand-by. In many parts of the country, way-farers, as they pass particular trees, have a semi-religious custom of tearing a strip off their clothes to hang thereon. Who puts the first strip, and why they do it, I have never clearly been able to ascertain; but, once a beginning is made, "one fool makes many," and the tree (usually a *Babool*) soon becomes loaded with rags and tatters. These are a perfect godsend to the Neophrons of the neighbourhood, whom I have more than once watched robbing these rural "shrines" of their trophies by the score. Sometimes the rags of various colors are laid out neatly in the nest, as if an attempt had been made to please the eye; sometimes they are irregularly jumbled up with the materials of the nest. Cotton wool, old and dirty, stolen, I suspect, from the old "*rizais*" or padded coverlids thrown with half-burnt dead bodies into the river, occurs occasionally in great lumps in the nest; and I have several times found nests lined entirely with masses of human hair, which, in a country where near relatives shave their heads as a part of the funeral ceremonies, often lies thick in the environs of villages and towns. Sometimes the birds line their nests with green leaves, much as *Pseudaetus Bonellii* and many other Eagles do. In size, the nests vary from 2 to 3 feet in diameter, and from 4 to 10 inches in depth.

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—"Lay in the third week of March; eggs, two only; shape, long oval; size, 2·53 to 2·75 inches in length and from 1·84 to 1·90 inch in breadth; color, pale brownish red, thickly blotched with dark brownish red: nest, a few twigs placed in holes of cliffs and difficult to approach." Mr. W. Blewitt records taking some twenty nests of this species in the neighbourhood of Hansie between the 20th of March and the end of April 1868. The nests were all on trees,—Peepul, Sheeshum, Burgot, Neem, and Keekur. None were more than 21 feet from the ground, and one was at a height of only 12 feet. They varied from 12 to 18 inches in diameter, and from 3 to 7 inches in thickness; some were slightly, some densely, put together, and were composed in almost every instance of small branches and twigs of the Ber and Keekur, both thorny trees. One nest had no lining, the others were more or less lined with straw, feathers, leaves, and rags, one or all; while in many instances rags were plentifully incorporated in the body of the structure. Two was the number of eggs in each nest; some of those taken at the end of April were still quite fresh.

Miss Cockburne says: On the Nilghiris, White Vultures are almost as numerous as sparrows, particularly near Kotah's villages. They fly, walk, or sit, about them all day long. These birds roost on large trees. They sit on the top of the extreme branches perfectly exposed to the weather. The White Vulture here generally, I think, nests on rocks, sometimes nearly inaccessible. They accumulate a large quantity of warm soft materials. One nest I had brought down to me, and found it to consist of a most curious mixture of things. Cotton, pieces of cloth, goat's hair, sheep's wool, large pieces of native blanket, and coir rope. Another pair of these birds had carried an entire sheep's skin with the wool to their nest.

"One of these nests had some dead frogs, lying at the edge; these were most likely intended for the young. They lay their eggs in the months of March and April, after the first thunder-storms."

Mr. J. Darling, Junior, says that "this species lays in April. One nest was found at Katy, 2 miles south-east of Ootacamund, about 6,800 feet above the sea. Another at Kartary, 6 miles south-east of Ooty, at 5,000 feet. The first nest was a niche in a precipice, under an over-hanging ledge of rock, in a very inaccessible place; the second nest could not be got at. The nest I reached was built upwards into a mound in a corner of the niche. The hollow in which the eggs were, was very perfect and round. The nest, or mound, was composed of sticks and twigs, some the size of a man's wrist. The cavity was lined with cotton, coir, sheep's wool and moss, a great accumulation of rotten bones, and other decaying matter scattered about. The bird was off and on engaged in the process of building the nest from June to February, when it stopped, and shortly before it commenced to lay, began to fill in the lining. The nest was 4 to 5 feet high, about 4 feet broad at the top; the hollow in which the eggs were, was about 18 inches in diameter and 6 inches deep. The eggs were four in number, taken in four successive weeks, one a week."

In Northern India, also, this species is not confined to the plain: I have seen the birds fully 8,500 feet high in the Himalayas, and have taken their nests below Simla at an elevation of fully 6,000 feet. Mr. R. Thompson says: "The Neophrons are to be found breeding in numbers along the precipices which crown the river Kossilla, from Khyrna upwards. On the sandstone precipices of the Sewaliks, and those of the Kumaon and Ghurwal outer ranges, numberless nests may be found. One pair breeds yearly on a precipice south-east of Nynee Tal."

Writing from Murree, Captain C. H. T. Marshall tells us that he "found a nest in a cliff in May, with two fresh eggs, at an elevation of about 4,000 feet."

Normally they lay two eggs; but I have repeatedly found birds incubating a single egg: twice I have found three eggs in the same nest, but in each of these latter cases, one of the three eggs was much smaller and feebler-colored than the other two.

In shape, size, and color, these eggs vary much. I have one egg, an excessively long pear, another for all the world like a goose's egg, while others again are as round as an egg of the Honey Buzzard's; but the normal shape is certainly a rather broad oval, somewhat compressed towards one end. The texture varies a good deal: in some it is coarser than that of any Vulture's egg, and in some there is almost a gloss; but as a rule the eggs are dull, and of a rather coarse, somewhat chalky, texture, less compact and indurated than in any of the true Vultures. They never have any *real* gloss, but some exhibit a sort of surface glaze which they lose by washing, as indeed they are apt to do much of their richest coloring.

In color, the eggs vary from pure greyish or rufous white, with only a few minute reddish brown specks at one end, to a uniform deep but dingy blood-red, recalling some of the deeper-colored falcon eggs. Between these two extremes, every variation in shade, extent, and intensity of markings, is found. Every possible shade of brownish red and reddish brown is met with, and every degree of markings, from a few distinct scattered specks, to streaks and blotches nearly confluent over the greater portion of the egg's surface or forming a conspicuous cap at one (more commonly the larger) extremity.

There is a common type, with a pinkish white ground, minutely freckled and speckled all over with dull brownish red, and then richly blotched and clouded towards one end, (at which the markings are often almost or quite confluent,) with a deep brownish red. Other eggs are uniform pale brownish pink, almost salmon color, without any deeper-coloured markings; while others of the same type have the color deepening towards one end, or are richly and boldly, or in others feebly and faintly blotched, streaked or clouded with a deeper shade. Some eggs when fresh are excessively handsome, and are colored quite like a Honey Buzzard's egg: one I have might pass, so far as coloring goes, for the Osprey's egg figured by Hewitson, Pl. VI. 1.

They measure from 2·28 to 2·82 inches in length, and from 1·8 to 2·1 inch in breadth; but the average of forty-five eggs measured was 2·6 by 1·98 inches.

7.—*Gypaëtus barbatus, Lin.*

The Lammergeyer lays from about the 15th of November to the 15th of March, the majority, I think, in January and February. It breeds throughout the Himalayas, and the vast range of hills which, under various names, divides the Punjab and Sindh from Afghanistan and Khelat.

The nest is commonly placed in almost inaccessible situations, in the face of some bold cliff; a ledge of rock, above which some other ledge projects, is generally chosen.

The only eyries I have been able to inspect were shapeless heaps of sticks, nearly a cart-load I should say, strewed on ledges of rock (over a space of some 3 to 5 feet long by 2 or 3 broad), intermingled with rags, huge feathers, and large bones, and plentifully besprinkled with the droppings of the birds.

Captain Cock found more than one nest of this species in the neighbourhood of Dhurumsala, on almost inaccessible ledges of precipices between 150 and 200 feet high. Of one that he visited on the 6th December before any egg had been laid, he remarks:—

"The nest had a quantity of old rags and bits of cord about it, and was well lined with flocks of wool quite fresh."

Later, this gentleman sent me the following note:—

"I should give this bird from November to the end of March for its breeding season, as I have observed them pairing in the air in the beginning of March. Another observation I have made is, that all the nests, old ones and new ones, that I am acquainted with, to the number of 15, are placed on precipices facing east or south; not one faces north or west. Vultures and Falcons do not seem to be so particular, as I find their nests placed indiscriminately on cliffs facing north or west. This year I have taken the following eyries:—On the 2nd of January, at Deveenah, near Rilloo, in the Dhurmsala district, a nest containing three eggs; a peculiarity here was that there were two nests, placed some 4 feet from each other on the same ledge, both quite new, but only one of them (the nest in which the eggs were) lined with wool. I have frequently visited this place since, as I thought that there *might* be two couples, but there were not.

"On the 29th January, a nest with two eggs. On the 10th February, a nest with one egg. I left this latter nest for ten days after this egg was laid, and then (I was afraid it would be hard-set) took it, the old bird being evidently incapable of laying another egg. This egg was a particularly large one, measuring 3·65 by 2·9 inches. After I had taken the egg, the birds came and destroyed their nest, pulling out all the wool it was lined with, and scattering it about. A fourth nest is now (March 7th) ready for eggs, and it was the owners of this nest that I observed pairing, as before mentioned, in March. I will also add my testimony as to this being a most cowardly bird, suffering itself to be driven off by *Gyps himalayensis*, and I have even seen little *Falco atriceps* put it to flight."

On a former occasion, he thus described another nest: "On the 4th December 1868, I found the nest of *Gypaëtus barbatus* in a hollow on the face of a steep precipice, situated in a range of hills, some 6 miles off the Grand Trunk Road, two marches from Rawulpindee on the Peshawur side. It was a large structure of sticks, and completely filled up the hollow or cave in which it was placed. It was lined with locks of the hair of hill goats, on which the eggs were placed; there was also one piece of cloth in the nest, some blue cotton stuff, by which I was reminded of this bird's relationship to Neophron. The eggs were set, I should think, from fifteen to eighteen days."

Mr. R. Thompson writes, that in Kumaon "this species breeds from November to February, late in which latter month the young may sometimes be seen; it selects ledges of precipices at elevations of 5,000 feet and upwards. The nest, a huge platform, some 4 or 5 feet in diameter, is constructed of small sticks and thick twigs, placed so as to form a footing for the young, and is lined with pieces of cloth, rags, &c. I have frequently noticed parent birds with only a single young one following them, and I am inclined to think that they seldom *rear* more."

Captain Hutton tells us: "These birds are common in the hills, from the Doon to the snowy range; it breeds for several seasons together in the same nest, sometimes giving the old nest a few repairs. The spots selected at Mussooree are of the most dangerous description, and often perfectly inaccessible; while even in the least dangerous spots, a man must be lowered down over the rock by a stout rope to ascertain if there are either eggs or young ones in the nest; since the latter being generally placed in a wide fissure in the perpendicular face of the cliff, it is not visible from above.

"One nest was found on the 30th March, and a boy was lowered down over the rock, but he found that the cleft and nest of two years previously had been abandoned, and a new nest had been made in another cleft lower down, in which was one young bird partially fledged. Not being prepared to rob the nest at that time, the nestling was left, especially as the old birds were near, and their movements somewhat threatening. On the following morning, the lad was again persuaded to descend, and as the old birds were absent, he secured his prize. The nest was built on a ledge of rock within a cleft, and was composed of a thick bed of sticks, lined with grass, old rags, bones, and what appeared to have been a portion of a sheet. There was nothing in the shape of food, except part of the wing of some large bird.

"During the present year (1869) a nest was prepared in the very same spot, and was finished on the 24th February; on the 10th of March it was visited, the old birds being at hand, but no eggs were found. It was visited again once after this, and found to be deserted. Towards the end of March another nest was visited, but it had been blown off the rock in a gale of wind."

It seems probable that, as in the case of the Egyptian Vulture, two is the number of eggs most commonly laid, and that three may, not very unfrequently, be found.

The eggs, of which I have now seen more than a dozen, vary much in shape, color, and size; but typically they are rather broad ovals, somewhat pointed towards one end. As regards color, I have now seen every variety of Neophron's eggs reproduced in those of this species.

The texture of all the eggs I have is rather coarse, but the shells are more compact and less chalky than those of the Neophron.

The colour of the shell, when held up against the light, is pale dingy yellow, as in Neophron, hereby further exhibiting the close affinities of these two species, and separating them from the true Vultures, all of whose shells, when seen against the light, are, to the best of my belief, a more or less dark sea-green.

None of the eggs had the slightest gloss. Of the two first I examined, both had a nearly uniform pale salmon buff ground, here and there mottled paler. One was devoid of all markings: the other was somewhat thinly blotched, clouded, and spotted in all parts, with pale reddish brown, not much darker than the ground color.

One, a magnificient specimen from Kumaon, was like a full-colored Falcon's egg. Some were a deep orange brown; another was dull white, thickly spotted, blotched and streaked, with pale, washed-out, reddish brown, and purple, the markings quite confluent on the large end, where they form a pale irregular mottled cap.

The two eggs from the second nest taken by Captain Cock (now in Mr. Brooke's collection) are, says the latter gentleman, "exactly of the color you describe (Rough Notes, p. 37): one, pale yellow brown, almost uniform, the spots are so small; the other, with a few larger and darker spots now and then. They are what I call poor-looking eggs, and not nearly so fine as the European ones in Hancock's collection."

The huge solitary egg from Captain Cock's third nest was a deep red brown, streaked in places with lighter brown.

We may now say that the eggs of this species vary from 2·96 to 3·65 inches in length, and from 2·5 to 2·9 inches in breadth; and that the average of thirteen eggs measured is 3·24 by 2·66 inches.

9.—*Falco peregrinator*, *Sundev.*

The only egg of this species—the true Shaheen—that I possess, or indeed have seen, was procured by Mr. Robert Blewitt on the 25th January in the Raipoor district. It measured exactly 2 inches in length by 1·43 inch in width. It was therefore comparatively (for the genus) a very narrow oval egg. It was like a very pale Jugger or Peregrine egg. A pale pink ground, with here and there very faint traces of pale purple clouds, very finely speckled and spotted with deep reddish brown, the specks being comparatively few and very minute over the small end, and somewhat larger and much more numerous over the large end, where they are somewhat blurred and more or less connected with each other by irregular smears of a somewhat paler brownish red.

Dr. Jerdon mentions that the present species breeds on steep and inaccessible cliffs, and that he has seen three eyries—one on the Nilghiris, another at the celebrated hill fort of Antoor, and the third at the great water-fall at Mhow. It lays its eggs, he remarks, in March and April, and the young fly in May and June, when they are caught by falconers.

9. *bis.*—*Falco atriceps*, *Hume.*

To my friend, Captain Cock, then of Dhurmsalla, I owed the first eggs of the Black-cap Falcon that I obtained. He sent them to me, together with the female bird. He gives a most interesting account of his operations. He found the nest on a ledge of rock, on the face of a most dangerous precipice. The nest had for many years been occupied by the Black-cap, but in 1868, a Roc, *G. himalayensis,* laid there, and had to surrender its eggs to Captain Cock. In 1869, the falcons again took possession, and on the 10th of March this gentleman visited it. "I went," he says, "to the Falcon's nest, and found the female sitting close: with great difficulty I got her off, by throwing stones down from above; but even then she did not fly, but only shifted her position on the ledge, so as to show me two eggs in the nest. I got men and ropes, and a friend, Captain Duff, to try and shoot her as she left the nest; but though I, with great difficulty, induced a man to descend and take the eggs (after I had all but gone over the precipice myself, a tuft of grass having given way under my foot at the very verge), the female got off scathless, or but slightly wounded, owing to the height of the precipice. Captain Duff, who has a house hard by, tells me that the birds are always killing the Blue Rock Pigeons under his very nose. Both birds showed themselves, but neither came sufficiently within shot to enable us to bag them, though we fired at the female." On the 17th March he returned to the nest, where the female was again sitting; on driving her off, he saw that another egg had been laid, and he again fired at the old bird, but, owing to the hazardous position in which he was standing at the time, again missed her. On the 20th he re-visited the eyrie. "I was sitting under the cliff when a Lammergeyer came sailing by, and the male Falcon dashed at him, and then returned to the nest, the female flying out in pursuit. As she returned, I shot her; the male then sat on the egg (there was still only one) for some time, when, by sending a man up above to throw down stones, he (the Falcon, *not* the man) flew off, and I got a shot at, and wounded him. He managed to get on to a tree overhanging the precipice, and though I got as near to him as I could and took a pot shot, he was too far off and sailed away down the *khud* (valley)." Subsequently Captain Cock took the third egg.

The extraordinary boldness exhibited by the female bird is very characteristic.

The nest, as may be guessed from its age, and from having once at least served our larger Himalayan Vulture (No. 3) as a laying place, was a large irregular mass of sticks. Two eggs were taken the first, and one the second time; but probably the normal number is four. Two of these eggs, which I saw, were very beautiful; broad, very perfect ovals, slightly larger than the eggs of *F. jugger,* and with shells of a somewhat finer and closer texture than those of these latter. The ground colour in both was a rich brick red, here and there faintly blotched and spotted with a darker shade, and with a few bold blotches and splashes, specks and spots of the deepest liver-colour; strange to say, there were one or two pure white spots on the ground colour, and a white spot or blotch in the middle of almost every one of the larger liver-coloured blotches. In my whole series of *jugger's* eggs I have none at all like these, although the eggs of both species are emphatically of the true Falcon type. The eggs appear to me fully as big as the average run of Peregrines.

They measure 2·1 inches in length by 1·66 and 1·68 inch in breadth.

Three more eggs of this species obtained, the one on the 6th February from a nest in a precipice near Delt in Kooloo, and the two others on the 3rd of the same month from a similarly situated nest near Nitta, also in Kooloo, differed from the eggs already described, as the eggs of all falcons will differ *inter se.* The single egg had a dingy brownish yellow ground, speckled, smeared, and freckled over large portions of its surface, with dingy, burnt-umber markings; a dirty washed-out-looking egg, such as is not uncommon amongst Neophrons, but is less seldom seen in Falcons. The other two were richly coloured; the one had a bright, brick-dust red ground, moderately thinly streaked, mottled and blotched with blood-red everywhere except at the large end; the other had a dull, pink ground, thinly speckled, spotted, and blotched all over with dark reddish brown: just towards the small end, the blotches are very thick and numerous, forming a small mottled cap.

These eggs measured, respectively, 1·98 by 1·63 inch; 1·95 by 1·60 inch; and 1·94 by 1·62 inch.

Major Radcliffe says, that "both this species and *F. babylonicus* breed in the rocks in the hills surrounding our hut encampment, near Kalabagh, chiefly towards the north and west. Many, I am told, breed in and about the *Khyber* pass and the mountains of Afghanistan. Certain breeding places are well known to the Native Chiefs, from which they obtain the young hawks for training every year."

11.—*Falco jugger, Gray.*

The Luggar Falcon lays during January, February, and March, but the majority appear to lay in the early part of February. I have never obtained an egg earlier than the 6th of January, or later than the 30th March. The situation of the nest varies; it is sometimes on large trees, the Peepul being perhaps the favourite in the Duab, and sometimes on ledges or in recesses of rocky or earthen cliffs, and sometimes in the face of ancient ramparts where one or two stones have disappeared, or on more or less inaccessible cornices of ruined buildings. I found a nest in the exterior walls of Togluck Shah's grand Egyptian-looking mausoleum, another in one of the lateral walls of the high gate of Futtehpoor Sikri. I have taken them times without number on ledges of the clay cliffs of the Jumna and Chumbul in the Etawah District, and I met with one containing three full-fledged young ones on the rocks of the Mata Pahar, overlooking the Sambhur Lake; still in those parts of the country with which I am best acquainted, the North-Western Provinces, Oudh, and the Punjab, I believe the majority breed upon trees. When built on trees, the nest is usually a large and massive one, some 2 feet in diameter, if circular, or if, as is more common, oblong in shape, some 2·5 feet in length by 1·5 feet in breadth, and fully 6 inches in thickness.* It is composed of twigs and small sticks, at times without any lining, and at times lined with a little grass, or straw, or even leaves. Occasionally: the nest is very much larger than I have described, but it will then generally be found that the bird, instead of building a nest of its own, has taken possession of, and repaired, one of some other bird. Near Bhureh on the Chumbul, a pair took possession of a nest that for the two previous years had, to my knowledge, been always occupied by our Indian Ring-tail Eagle (*H. leucoryphus*); and Mr. W. Blewitt, who took five nests of this species in January and February, in the neighbourhood of Hansie, remarks that in every case the Falcon had taken possession of, and more or less repaired, a deserted nest of the common Tawny eagle (*A. fulvescens*). The repaired nests were all on Keekur trees (the favourite *par excellence* of *A. fulvescens*) at heights of from 17 to 24 feet from the ground. Three of these nests contained five eggs, a very unusual number. There was no mistaking either eggs, or birds, all of which Mr. Blewitt kindly sent me.

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* It appears to be a general rule with birds that build sometimes on trees and sometimes on rocky ledges, that their nests in the former situation are always deeper, more cup-like and more massive, than when in the latter.

Where the bird selects a recess or ledge in a cliff's face for nesting, a large nest is rarely made, a few handfuls of sticks, just enough to prevent the eggs rolling about, with a few feathers, accidentally or purposely intermingled, is all that is usually met with in such situations, and I have twice taken the eggs laid on the bare earth in a slight depression, without one particle of stick, grass or feather near them.

Mr. R. Thompson remarks: "This Falcon breeds on lofty trees; usually on one, with others standing near it, in open cultivated country: even when it is a forest bird, it chooses such parts as are tolerably open, with widely spreading glades; but habitually it prefers open localities.

"A nest found in open forest country, south of Lall-dang, in the provinces of Kumaon, on the 5th February 1868, was up to that date unfinished, though both the Falcons were present. The male I observed carrying small twigs and roots to the female, who seemed the architect. This nest was begun in a large Semel tree (*Bombax heptaphyllum*) on the forked branch of one of the principal lateral arms, and might have been 40 feet from the ground. The nest was about 2½ feet in diameter, with the egg cavity about 10 inches. The inside was lined with small fine roots and bruised dry leaves, evidently such as had been attached to the twigs which composed the body and foundation of the nest; on the 27th March succeeding, the nest was again visited. The Falcons were out at the time, it being about the middle of the day. On a man ascending the tree, both birds quickly appeared, and the male, which appeared an old adult, made the first swoop at the man climbing, passing within a few inches of his head. The female (which appeared not to have cast her nestling plumage) then followed, making her attacks with more vigour and determination. We found three eggs, one addled and two a good deal incubated."

Mr. A. Anderson states that "the Jugger breeds in high trees, in the absence of cliffs, during January and February, laying usually four eggs. In size they are intermediate between those of *F. peregrinus* and *F. islandicus*, and not unlike Hewitson's plate of that bird's egg. I have never seen this Falcon build *its own nest on trees*, but have invariably found it take possession of the old nests of *Gyps bengalensis*, or of *Milvus govinda*. Generally speaking, it is not even re-lined; but it is worth mentioning that one nest examined in my presence, in which the eggs were tolerably well incubated, was comfortably and warmly lined with several handfuls of small feathers."

I once noticed a curious trait in this bird, somewhat similar to that related above of *Gyps bengalensis*. On the 2nd of March 1866, near Soj, in the Mynpoorie district, I found a nest of these birds on what had been a large Peepul tree, but which, owing to the continual cutting of its branches for the elephants of the Chohan Rajahs of the neighbourhood, had become a gaunt, white spectre-like thing with two or three huge nearly bare arms, each with a dense cluster of leafy twigs near the extremity, and smaller similar clusters at odd angles of the branches. The tree stood solitary in the midst of a wide tract of land overflowed during the rains, but at the time I speak of, waste and parched, with no other vegetation for a good mile in any direction but patches of down-trodden, withered rush. The nest was in one of the highest clusters. The male was sitting on the broad bare bough, about 6 feet below it, tearing a Roller (*Coracias indica*) to pieces, and I may mention that, when examined, this bird proved to have had the whole head, neck, and upper part of the body eaten; the wings, tail, and lower portion of the body, were altogether uninjured. I shot the male, and he fell flat on the bough. A man was sent up, who threw the male down; still there were no signs of the female, and I called to the man to search the nest for eggs. As he placed his hand at the side of the nest, which he could only just reach, the female suddenly appeared from the hollow of the nest, and stood upon its margin. The man drew back rather startled, the female turned towards the inside of the nest, gave a vicious drive at it with her bill, and flew off. On taking the eggs, it appeared that she had driven her powerful bill into one of them, making a triangular hole, each side of which measured about ½ inch. The female must have seen her mate shot, and have felt, perhaps from the man still coming to the nest after securing the male, that he intended to rob it. Did she break the egg herself in anger? The eggs were nearly ready to hatch off. Had she, perchance, some glimmering idea that she might let the chick out and thus save it? It is impossible to say: but a whole party of us witnessed the fact, and it seems worthy of record. What struck me fully as much in this case was, that though the male was in the act of tearing the Roller to pieces, and though the whole ground, for many yards round the tree, was strewed with feathers of Pigeons, Doves, and Rollers, a pair of Doves (*T. risoria*) had a nest with young ones in another leafy cluster of this same tree, and another pair were sitting calmly on two bare sprays, not 15 feet from where the male, whom they could not help seeing, was devouring his prey. Had the Roller always been his prey, one might have understood their fearlessness; but around the tree lay the feathers of, I should say, at least fifty individuals of their own species. That the Falcons must *designedly* have spared their fellow-tenants is clear; the two birds, however wary and watchful, could never have built their nest, hatched their young, and partly reared these latter in safety, within 30 feet of the Falcon's nest, unless these latter had allowed them to do so absolutely without molestation; for, had one of the pair only been once set upon or pursued, they would assuredly have deserted the nest. The natives declared that this pair of Doves were left by the Falcons as decoys, and that the other pair were strangers, who would probably soon have fallen victims to the confidence engendered by seeing the resident birds rearing their young in security.

Colonel Delme Radcliffe, however, tells me that "it is always the case with the larger Falcons that their fellow-tenants of a rock or a tree are safe from molestation, and in the breeding season actually look to them for protection. As an exemplification of this, I may mention the following:—At the two longitudinally separated ends of the Isle of Wight are two Falcons' nests *(F. peregrinus)*, one at the Culvers, the other at Fresh-water. In the neighbourhood of the nest, in each case, innumerable Sea-fowl, Kestrels, Jackdaws, &c., breed peacefully, while the Falcon's nest contains evidence that these same species form their young ones' food. But the going out and coming in of the Falcons causes no alarm among the tenants of the face of the cliff for 6 miles or more. I have seen them skimming about under a Falcon, in a position to stoop, apparently in the most tempting and enticing manner. But let a Falcon from the other end of the Island appear, and a scream of alarm from thousands of tenements brings out Falcon and Tiercel, and the clamour subsides as they swoop away over the sea to thrash the stranger, sometimes for miles, and on their return no ornithologist, not on the look-out, would be aware that a Falcon was approaching. The same is the case with all Hawks that have taken up their abode at a place. I kept a Shaheen at hack here for some time, but I never knew, while sitting in my house, by any commotion among my neighbour's Pigeons and the Crows, &c., which inhabit the neighbourhood, when my own Falcon was going out or coming home, at least after she had been at liberty for a week; while I always had instant notice of the approach of a wild Peregrine or Shaheen."

The normal number of the eggs is four; but while five are occasionally found, the bird often sits on only three; and once I took two eggs, ready to hatch off, out of a very old pair's nest, that in former seasons had always contained the full number. In colour, the eggs vary much, as indeed do those of all true Falcons. The usual type is a reddish, brownish, or yellowish-brown ground, very thickly speckled and spotted all over, with a darker and richer shade of the ground colour. The spots are often more crowded at one end than the other, producing occasionally the effect of a clouded cap; some, in addition to the multitudinous specks, exhibit bold red blotches, or dark streaky clouds, and some again are very feebly coloured, a nearly uniform pale dingy buff, with scarcely a trace of blotches or even specks of a darker hue. In shape, the eggs are commonly a broad oval, slightly more pointed at one end, of a dull, glossless, and slightly chalky, but still compact texture. The egg lining is white or slightly reddish white.

Elsewhere I have thus described the eggs:—"No very great variation in shape is observable in the eggs of the species. They are all a somewhat broad, but generally very perfect oval. In texture, they are rather fine, but at the same time (if I may so express it) chalky, and they are perfectly devoid of gloss. The eggs, as a rule, are a longer oval than those of *Falco peregrinus*, and are scarcely ever so richly colored as the latter often are. The coloration is, of course, of the true Falcon type. Some eggs are of nearly uniform pale dingy yellowish brown, blanching towards one extremity or the other, indistinctly clouded, blotched or mottled with a somewhat deeper and redder brown. Others are a nearly uniform red brown, with scarcely any traces of distinct markings; others have a nearly pure white, reddish white, pale dingy yellow, brownish yellow, or reddish brown ground, more or less boldly, extensively, and thickly blotched and clouded, or even freckled, mottled, and streaked with more or less bright or deep, brick or blood red. As a rule, the markings are not very bold or sharply defined; in but few is there any decided tendency towards capping at either end, and all have a more or less freckled and dotted appearance. These eggs fade much as time passes, but when first found many of them are, to an oologist's eye, perfect pictures."

In size they vary from 2·15 to 1·85 inch in length, and from 1·65 to 1·48 inch in breadth; but of ninety-eight eggs measured, the average size was 2·01 by 1·57 inch.

16.—*Chiquera typus, Bonap.*

The Toorumtee breeds from January to May, the majority, I think, laying in March. I have myself as yet obtained no egg earlier than the 15th February, or later than the 15th of May; and all those obtained in May were from the Punjab, where many birds breed later than in more southern parts of the country.

They nest, I believe, exclusively on trees. I have seen no record of their building on rocks, as so many of the Falcons often do; and I once took a nest in the Sewaliks in a Peepul tree, at the foot of a cliff, full of ledges and boulder holes, which, had the bird any sort of inclination for such localities, would have been sure to have attracted it.

Where such occur, they prefer large trees—Peepul, Mango, and Tamarind—(more commonly the two latter) usually selecting one of a small group standing by itself. In the Punjab and Rajpootana, where large trees are scarce, their nests may be found on mere bushes, not above 10 feet from the ground.

The nest is generally firmly fixed in a fork near the top of the tree, and is typically a very neat, compact, and characteristic structure; it is usually circular, some 12 inches in diameter, and from 6 to 9 inches in thickness, with a deep egg cavity, from 5 to 6 inches in diameter, and from 3 to 3·5 in depth; but I have seen some nests, comparatively thin platforms, with only a depression of 1·5 to 2 inches in depth towards the centre. The lower portion of the nest is constructed of pretty stout twigs, of various kinds of wood, closely put together; the upper portion of finer twigs still more closely interwoven. The egg cavity or depression is lined with fine roots, or vegetable fibre, the roots of the Khus grass (*Andropogon muricatum*) being commonly chosen for this purpose, along with straw, a few feathers, and occasionally a shred or two of cloth, the lining being firmly intertwined with the twigs forming the walls of the cavity.

These birds make, I think, their own nests fresh and fresh every year. I have repeatedly seen them building new nests in trees containing very nice last year's nests of crows and other birds, and though I have very often looked them up again, I have not as yet ever found a nest tenanted by the Toorumtee during two successive seasons. Both sexes assist in building, and they make no little fuss about the placing of each twig that is brought up. The normal number of the eggs is four; but I have found the female sitting on only three. Two nests, each containing five eggs, have been reported to me; but these are very exceptional.

Mr. William Blewitt mentions taking several nests of this bird, which at Hansie is known as the *Koohee* (a name elsewhere applied to the Shaheen), in March, April, and May. The nests were placed on Peepul and Jhand trees, at heights of from 10 to 24 feet from the ground; most of them were scantily and loosely, but one or two densely and compactly, constructed of fine Babool *(A. arabica)* and other twigs, lined with fine straw, feathers, and a few rags, and measured from 8 to 10 inches in diameter, with a cavity from 2 to 3 inches deep. None contained more than four, and one had only three, much incubated, eggs.

Mr. A. Anderson remarks that it "breeds generally in February and March. The few nests discovered by me, I attribute solely to the fuss made by these little Falcons, as they are most pugnacious and noisy during the breeding season, actually attacking Kites and Crows at a considerable distance from the tree they have monopolized. On two occasions my tent happened to be pitched in a Mango-tope, where a pair of Toorumtees were busy building, and I found them a perfect nuisance, as they were incessantly darting out and driving away all manner of imaginary enemies. The nest is generally placed in a leafy clump near the top of a tree (by preference the Mango), and it is by no means easy of detection. Four is the usual complement of eggs they lay; and in size and appearance some in my collection would easily do duty for those of *Falco subbuteo*, as figured by Hewitson. On the whole, there appears to be the same relation between the eggs of this bird and of the Jugger Falcon, as there is between the eggs of the Peregrine and the Kestrel.

"Mr. Hume states that he has as yet obtained no egg earlier than the 15th of February. It is, indeed, strange that the only three nests taken by me were *all* before that date, one of them actually as early as the 9th of *January* last. One of these deserves special notice. I was returning home late on the evening of the 4th of February last, when my attention was attracted by the familiar cry of one of these birds, which I found was attacking a common kite in the most furious manner, at a considerable height in the air. The only tree for a mile round was a gigantic solitary Mango; and no sooner had I sent my man up the tree, than the little Falcon flew straight to her nest, quite prepared to hold her ground. The nest contained two fresh eggs; but one of them had a largish hole on one side, exactly like what would be made by the beak of a bird; and through this aperture I blew the specimen. I imagine the Toorumtee had done this from anger,* when it saw that the nest was about to be robbed."

The eggs vary somewhat in shape, but are generally, I think, much like those of a common hen, though perhaps slightly narrower and of course much smaller. In colour, they vary from very pale yellowish brown, with just a few reddish brown specks, to a nearly uniform dark brownish red, obscurely mottled and blotched with a somewhat purer and darker red: tpyically they may be said to have a reddish white ground, so thickly freckled and speckled with dull brownish red as to leave but little of the ground colour visible. Often they have a sort of ring of more or less feeble blotches near the large end, and at times a zone of rather higher colour than the rest of the egg near the middle. The eggs are normally a long oval; and, with the exception of shape, which is invariably less round than those of that species, the eggs of the Toorumtee are perfect miniatures of the Luggar's. As far as colouring goes, every egg of the former, in my collection, can be matched by some one of the latter's that I possess. In size and colouring they remind us not a little of the eggs of the Merlin; but, as a rule, they are somewhat narrower than these, and a greater number of them belong to the dingy, yellowish brown, Falcon type, and fewer to the deep red type.

In length they vary from 1·6 to 1·75 inch, and in breadth from 1·20 to 1·33 inch; but the average of forty-four eggs measured was 1·66 by 1·27 inch.

17.—*Tinnunculus alaudarius, Gmel.*

The Kestrel, I have now ascertained, breeds throughout the Himalayas from Afghanistan to Sikhim, in the Sulliman range, and the hills that divide Sindh from Khelat, and in the Nilghiris. In the Himalayas it lays in April, May, and June; in the Nilghiris it lays as early as the last week in February, in March, and April.

The nest is almost invariably placed on rocky ledges or small holes in cliffs; but I have well-authenticated accounts of its nest having been taken in ruined buildings both in Cashmere and Kumaon, and even in a tree in Murree. In the Himalayas, its nest is seldom found (so far as my experience extends) below 7,000 feet; but in the Nilghiris it breeds at a somewhat lower elevation, as at Kotagherry and Neddivatam. In the Himalayas some nests may be found up to nearly 10,000 feet; in the Nilghiris they are to be found in suitable places as high as these occur, say 7,500 feet.

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* *Vide Supra*, No. 11.

The full number of eggs varies from three to six; but five is, I think, the usual number.

The nest is round, oblong, or semi-circular, according to the shape of the site chosen, and is a thicker or thinner platform from 12 to 20 inches in diameter, and 2 to 6 in thickness, made of small twigs, in which grass roots, rags, and, as Mr. R. Thompson informs me, at times strips of cloth, ½ yard in length, are incorporated, and serve as lining.

In one case (a nest I myself found close to Simla), there was very little nest at all,—only a few sticks with a little grass, two or three pieces of rags, and a few feathers.

Captain Hutton remarks (in Epist): "The Kestrel is very common, both in the outer hills and the Doon; at Mussoorie I have known it to breed upon a lofty ledge of rocks above the Superintendent's offices."

Mr. W. Theobald makes the following remark on the breeding of this bird in the valley of Cashmere:—"Lays in the third week of April; eggs, six in number, blunt ovato pyriform; measuring from 1·51 to 1·68 inch in length, and from 1·22 to 1·27 inch in breadth; colour, pale reddish brown, freckled and blotched with brownish red. Nest, hole in serai wall of thanna, south of Buranegala, Shahabad, and valley generally."

Dr. F. Stoliczka remarks that "*Tinnunculus alaudarius* is common all through the North-Western Himalayas, on the southern side as well as in West Tibet. I found this common European Hawk breeding near Chini in narrow crevices of rocks. The eggs are dirty white, mottled and irregularly spotted with reddish brown. The young birds vary extremely in colour of their plumage; but the old ones are in every way identical with those from Europe."

From Dhurumsalla Captain Cock says: "This bird remains with us all the year round, although it retires higher up the mountain during the month of May. I noticed a pair of birds about a precipice some two or three times, and concluded that they built there. On the 27th of May I went with a rope, and found that there were three young ones, only a few days old, in a niche in the precipice that was overhung with grass, rendering the entrance to the nest difficult to be seen. This nest was on the mountains, at a height of 7,000 feet above the sea level, and I doubt their breeding lower down, though an officer assured me he saw a Kestrel breeding on a cliff on the banks of the Beas in February. I found another nest, at about 8,000 feet elevation, on the 27th of May, with one egg in it. I had watched the birds pairing some days before, and with the help of a rope managed to secure the solitary egg. On the 5th of June, I sent up a party, who got three more eggs out of this same nest. Two of the eggs, the largest and smallest, measured 1·55 by 1·16 inch and 1·35 by 1·14 inch."

Mr. R. Thompson sends me the following:—"The Kestrel breeds in this country, preferring the shelving of a rock to any other situation. I have seen the nest and young on the precipices of the Sewaliks. A dozen nests might be pointed out on the precipices overhanging the Kossilla river between Khyrna and the Lat bridge. In the valley here noted, it may be seen breeding in company with the Neophron.

"At Pooree, in the interior of Ghurwal, a Kestrel carried off a large piece of a *pugree* belonging to one of my shikarees and took it off to its nest, whence it was recovered by the fellow letting himself down by a rope. I was witness to the whole transaction. At Nynee Tal, two pairs breed yearly; one on the western precipices, the other on the south-eastern, not far from where I live."

Writing from Murree, Captain C. H. T. Marshall remarks :—

"The Kestrel usually builds in rocks, but we found a nest about 60 feet up a Pine tree, with five hard-set eggs in it, of a much duller, dirtier brown than usual. This was on the 14th June. The nest was apparently one originally belonging to *Corvus culminatus.*"

Mr. J. Darling, Junior, informs me that he has "twice taken a nest in the neighbourhood of Neddivatam (Nilghiris), at an elevation of about 6,500 feet, *first,* on the 21st February 1869, *secondly,* on the 1st March 1870. The nest, for it was the same that I robbed in two successive seasons, was placed in a natural hollow on the top of a dead stump, about 14 feet from the ground. It was circular, and composed of a few pieces of sticks, some dry grasses and fibres, and was about 8 inches in diameter, and had a depression about 4 inches deep, which contained four eggs, having a dirty white ground, speckled and blotched all over with brownish red."

From Kotagherry Miss Cockburn says :—

"I have noticed that a pair of these birds appropriate a certain cliff or precipice, and breed there year after year. One pair have thus built on a nearly perpendicular cliff, some hundred feet in height, placing their nest in a small cleft about half way up. One of the two birds always keeps watch over the nest even before any eggs are laid in it; the nest is inaccessible to ordinary mortals, but last year I sent for a couple of Kurumbas, and they very soon secured both nest and eggs.

"The nest was composed of straws, a very few feathers, and some small pieces of dirty rags, rudely collected together. Its foundation was on a rock, so it needed no other. It was taken on the last day of February. It contained four eggs. Three of the eggs were very much alike, having a dark reddish ground and darker spots; but one was considerably lighter, with large blotches at the smaller end instead of at the larger, as is usually the case."

Mr. Davison tells me that the pertinacity with which these birds return year after year to the same nest is remarkable. At Neddivatam there was a nest that had been robbed for four successive years by Mr. Morgan, in which he again found the Kestrels laying in the fifth year. He says, too, that, though this is not always the case, he thinks that after the first set of eggs have been taken, this species, unlike other Falcons, often lays a second time.

Mr. Thompson remarks that this species is "common during the cold weather in all parts of the Central Provinces. I doubt if these birds leave the mountainous parts of these provinces for breeding purposes, as I have seen couples hanging about near precipices from April to June, after which I returned to head-quarters, and have never found the nests."

Mr. Thompson here refers to the Satpooras, the Meikle Range, &c. I am also informed (but do not vouch for the fact) that it breeds near Mahabuleshwur.

The eggs resemble those of the preceding species, but are smaller, slightly broader, and less uniform in their colour. In shape they are broad ovals, more or less pointed or compressed towards one end. The ground colour is a darker or lighter brick or blood red, blotched, or mottled and freckled with a deeper shade of the same colour, the blotches being in some eggs strongly defined and well marked, and the whole tint of the egg being in some specimens browner and yellower than I have above described. The eggs are glossless, and the shell, though fine and compact, has the sort of chalky texture noticed in the eggs of *F. jugger* and *C. typus.* The eggs vary from 1·46 to 1·65 inch in length, and from 1·13 to 1·30 inch in breadth; the average of nineteen eggs measured being 1·57 by 1·21 inch.

21.—*Astur palumbarius, Lin.*

The Goshawk breeds in India, so far as I have been able to ascertain, only in the higher regions of the Himalayas, in the immediate neighbourhood of the snows.

Two eggs of this species which I possess, were found in a nest about 40 feet from the ground, in a Deodar tree in Bussahir, on the 15th of April, at an elevation of about 9,000 feet. They are short, broad ovals, slightly compressed towards one end, glossless, of a greyish white color. They were much incubated, and one of them is a great deal mottled and spotted with faint brown stains, whether natural or the result of dirt during incubation, I do not know. Held up against the light, the shells are a bright sea green. These eggs were taken by a native, whom I have always found reliable in the matter of eggs, and brought to me along with one of the parent birds, the female. I have myself no doubts as to their authenticity.

They measure 2·2 by 1·78 inch and 2·1 by 1·7 inch.

A pair of very young birds were brought late in July, while I was at Simla, for the Rajah of Putialla, from near the Chor, and the shikaree asserted that he had taken them out of a nest placed near the top of some kind of Fir or Pine tree.

Mr. R. Thompson, an enthusiastic falconer by the way, tells me that "they breed from March to June, building on trees a large circular nest of coarse twigs, in which they lay three or four nearly pure white eggs. They confine themselves peculiarly to the interior of the deep, precipitous, woody valleys, lying close to the snowy peaks. They usually, I am told, select a tree of the Birch, *Alnus boojputtia*, or one of *Cupressus tomentosa*, to build their nests on.

"During this period the birds are very daring, and will readily attack a man attempting to climb up to the nest. In these woods the Moonal Pheasant is very abundant, and no doubt affords capital quarry for these Hawks."

23.—*Micronisus badius, Gmel.*

The Shikra breeds pretty well all over the plains of India, and in the Himalayas up to a height of 5,000 feet, or possibly more. I found a nest with young ones many years ago at the back of Landour at fully this elevation; and writing from Murree, Captain C. H. T. Marshall remarks: "On May 18th, I took a nest belonging to this species, containing two bluish-white eggs, from the top of a high Pine tree."

The Shikra lays in April and May, and in the Central Provinces in June also, building for itself a moderately-sized nest on trees, large and lofty ones being, as far as my experience in the plains goes, always selected.

Writing from Gurhwal, Mr. Thompson says: "This is a regular breeder in our forests, and always chooses trees standing on the edges of streams or stagnant pools. The birds are very fond of frogs, which they are constantly stooping at. They are noisy and quarrelsome, if any large bird approaches their nest."

The nest is usually placed in a fork high up, and near the top of the tree. It is but loosely built of twigs and smaller sticks, lined with fine grass roots; is much smaller and less compact than those of the Toorumtee (*Chiquera typus*) often are, and may average about 10 inches in diameter.

These little hawks take, I should say, a full month in preparing their nest, only putting on two or three twigs a day, which they place and replace, as if they were *very* particular and had a great eye for a handsome nest; whereas, after all their fuss and bother, the nest is a loose ragged-looking affair, that no respectable crow even would condescend to lay in.

The greatest number of eggs I have ever taken in a nest was four; but I am inclined to think that the generality only lay three. The eggs do not vary much in shape. They are a little shorter and stouter than those of *Chiquera typus.* They are oval or somewhat pyriform, a rather longer egg in proportion to its breadth than one expects to find in this class of bird. They belong to the Goshawk and not to the Sparrow Hawk type. Smooth, fine, glossless shells, of a pure, delicate, pale bluish white, as a rule absolutely devoid of markings; at most, thinly sprinkled all over with very faint greyish specks and spots, thus differing widely from the apparently closely allied *A. nisus,* whose eggs are often richly, and always, I believe, more or less marked.

In size the eggs vary from 1·48 to 1·65 inch in length, and from 1·12 to 1·32 inch in breadth; but the average of sixteen eggs was 1·55 by 1·22.

24.—*Accipiter nisus, Lin.*

Sparrow Hawks, belonging probably to both the present and the next species, breed not uncommonly in woody valleys in the interior of the Himalayas. I have repeatedly seen their nests, and once (in May) took one about two marches on the Mussoorie side of Gungootree, containing four bluish white, red blotched eggs, exactly like, it seemed to me, the Sparrow Hawk's eggs I had so often taken as a boy at home.

I cannot now be sure whether these eggs belonged to the true *nisus* or to *melaschistus.*

Captain Thompson of Simla assured me that one or two pairs of the true Sparrow Hawk breed yearly in Annandale, just below Simla, laying in May and June.

I verified the fact of one pair breeding there last year, though I failed to secure the eggs.

At the same time the great majority of the present species do, unquestionably, I think go further north to breed. Dr. Stoliczka remarks: "Both the Kestrel and Sparrow Hawk were common in the upper Lachen and Lachung valleys after the middle of September, evidently migrating southwards. None were seen on the Chola range at the end of August. The Kestrel was seen a few days sooner than the Sparrow Hawk."

This is quite my own experience: a few pairs remain to breed all over the Himalayas in well-wooded localities, at elevations of from 5,000 to perhaps 8,000 feet; but the vast majority go further north, and with numberless young birds begin to re-appear in September.

Captain Cock took three eggs of this species on the 2nd of June out of a nest in a tree near Soonamurgh, in the valley of Cashmere. The parent bird which I examined is, unquestionably, an adult male *nisus,* corresponding exactly with our little red European specimens. One of these eggs is a very perfect, rather broad oval. The shell is fine and compact, but there is no gloss. The ground colour is a very delicate pale green, or greenish white, very boldly and profusely smeared, blotched and spotted with a very rich reddish brown, and with a very few small faint, purple clouds here and there underlying the primary markings. The larger end of the egg is nearly spotless, while of the remaining three-fourths of the surface fully half is occupied by the markings. I have seen richly coloured kite's eggs, which, except as regards size, closely resembled the egg above described, which measured 1·73 by 1·33 inch.

24 *bis.—Accipiter melaschistus, Hume.*

This species, or race, as some will doubtless consider it, although Mr. Gurney, and I understand Lord Walden also, accept it as a good and distinct species, appears to be confined to the Himalayas. My own specimens are all from within a circle of about 80 miles round Simla, but it is not a purely local race, as I have seen a typical specimen in Mr. Mandelli's collection in Darjeeling.

The Dove Hawk is distinguished from the European *nisus*, by its somewhat larger size (the males especially being noticeably larger than those of *A. nisus*), longer wings, and conspicuously more powerful tarsi, toes, and claws, and specially by the extremely black tint of the head and nape which extends more or less on to the back.

The first eggs that I obtained of this species were taken out of a nest near Kotegurh, on the 28th of April, by Captain Blair. The nest was a very slight one of sticks, placed on a ledge of a high cliff. It contained two eggs very similar to, but perhaps a trifle larger and more elongated than, those of the common Sparrow Hawk, *A. nisus*, generally are. In shape the eggs were somewhat elongated, nearly perfect ovals, only just perceptibly compressed towards one end. The ground colour is a faintly bluish white. In both eggs one-half of the egg is almost entirely spotless, whilst the greater part of the other half of the egg is occupied by a broad, irregular mottled and blotched zone of a burnt sienna brown, in spots becoming almost black. In neither egg does this extend quite to the end, and in one it is very much more strongly marked than in the others. In both a few faint pinkish purple clouds or spots underlie, or are intermingled with the brown marking of the zone. The texture of the egg is fine, but it has little or no gloss.

On the 29th of May I obtained a second nest near the same place, and very similarly situated, as in the former case, only securing the female. The nest contained three eggs; one of these was of much the same type as the preceding; in one the primary markings were more generally distributed over the whole surface, were more broken up into specks and spots, freckles, and exhibited a number of large secondary pale purplish clouds. The third had the whole surface thickly speckled and spotted with a somewhat more reddish brown, and the whole smaller end blotched and smeared almost confluently with brownish red.

These five eggs varied in length from 1·65 to 1·77 inch, and in breadth from 1·27 to 1·32 inch.

26.—*Aquila chrysaetos, Lin.*

The Golden Eagle occurs and breeds sparingly in the Himalayas, from Sikhim to Afghanistan; in the eastern and central portion of this tract it is confined to the immediate neighbourhood of the snowy range, but in the extreme north-west it comes nearer down towards the plains. Mr. Frederic Wilson, well known as "Mountaineer," writing of the country about Gungootree and Jumnootree, tells me that it inhabits the hills jutting out from the snowy ranges, and often soars over the latter and up their remote valleys. It is never seen on the lower ranges. It does not go *into* the dense forests, but may be seen sailing above them and along hill-sides that are entirely bare or only studded with a few trees here and there. A pair are generally seen together. They feed on Pigeons, Moonals, and more especially on the Snow Pheasants, on the young of Tahr and Burhel, and will kill adult Musk Deer. I have several times seen them do this. The nest I have not seen, except on a precipice, which was quite inaccessible."

On the other hand, at Thundiani, a hill some 9,000 feet high, overlooking the Agrore valley, on the borders of Hazara, Captain Unwin found a nest and secured a young one thence, along with the female bird, which he sent me. He says: "The nest was placed on a Deodar tree, overhanging a steep precipice. It was about 25 feet from the ground, and was composed of a vast number of dried sticks and branches, collected from the neighbouring Pine trees. These were piled up against the trunk of the tree to a height of about 6 feet, and formed a platform of almost 3 feet in width; it was lined or littered with dry grass and roots. Some Goojurs, who live near the steep ravine where we found the nest, stated that this pair of Eagles had bred in this same nest for the past three years, and that they occasionally carried off small lambs and kids from their huts."

27.—*Aquila mogilnik, Gmel.*

The Imperial Eagle breeds but sparingly in the Himalayas, from Nepal westwards, and still more exceptionally in the plains of the North-West. The vast majority of the multitudes of this species that during the cold season throng the well-wooded and cultivated portions of the plains of continental India, go further north and west to breed.

I have myself only found them breeding in the Upper Punjab, and there only on three occasions. They lay (in the plains) in February and March, and possibly April; building a large stick platform on or near the tops of trees;—Peepul trees in all the instances in which I found the nests; but also at times, like the Tawny Eagle, on Babool and other thorny trees. The nests that I saw were from 2 to 2·5 feet in diameter, some 6 to 8 inches thick, composed of rather small sticks and lined with a few green leaves. One nest contained two hard-set, another three fresh eggs, and the third only one; but from accounts received from Mr. W. Blewitt and others, two appears the normal number.

Mr. Blewitt took a nest of this species near Hansie, in the Dhana Beer (a sort of preserved wilderness), on the 22nd February 1868. The female, shot on the nest, was sent to me,—an old, unmistakeable, black *mogilnik*, with conspicuous white scapular patches, and yellowish head and nape. Mr. Blewitt describes the nest as very dense and compact, 7 inches thick, by 18 only in diameter; composed entirely of Keekur (*Acacia arabica*) twigs and without *lining*. The nest was placed like that of *A. vindhiana*, on the top of a Keekur tree, some 18 feet from the ground, and contained two fresh eggs.

The eggs of this Eagle vary much in size and shape. I have one nearly as large as any one of the Golden Eagle's, figured by Hewitson, but most of them are little, if anything, above the size of an average *vindhiana*.

They have the usual pale, greyish white ground, unspotted in most; faintly spotted, and streaked with very pale brown, in others; and in one, richly blotched with purplish brown. They seem normally of a somewhat broad oval, but one or two are a good deal lengthened; and one, which is considerably larger than the figure in Bree, which I took early in February (a solitary egg in a huge nest) is absolutely pyriform. Placing together specimens of the eggs of *mogilnik, nævia, vindhiana, Bonellii, gallicus* and *Macei*, I am unable, so far as texture goes, to point out any certain difference. There is scarcely any gloss on any of the eggs of these various species; but on a few of the *vindhiana* there is a slight trace of this.

In size, the eggs vary from 3 to 2·6 inches in length, and from 2·15 to 1·95 inch in breadth; but the average of nine eggs measured was 2·7 by 2·09 inches.

28.—*Aquila nævia, Gmel.*

The Spotted Eagle (at least the bird which we in India generally identify with this species) breeds from April to June, in suitable situations, throughout Central and Northern India. Occasionally a nest *may* be met with, like one I found near Jodhpoor, in comparatively arid districts, but almost without exception their breeding haunts are well watered tracts, where perennial canals, rivers, lakes or swamps, furnish an abundant supply of frogs, the favourite food of the young. Generally these tracts are well-wooded, as well as well-watered; but this species breeds plentifully, I am assured, in Sindh, which can nowhere, even in the neighbourhood of the large broads, which the Spotted Eagle so affects, be termed well-wooded.

In the Sub-Himalayan tract, from Sikhim to the Jumna, numbers of the Spotted Eagle breed, as they do also in Raipoor and the Tributary Mehals along the banks of the Mahanuddy and its affluents, and along the larger streams which drain the jungly portions of the Mundlah and Balaghat districts; on one of these latter streams Mr. R. Thompson found a nest in May, built on the top of a large Sâl tree (*Shorea robusta*), and took thence a young bird, which he long kept in confinement.

On the 17th May I found a nest containing two eggs, just on the point of hatching, on a huge *Terminalia* tree, in the Sikhim Terai, a few miles from Silligoree. The nest was a mere circular pad of sticks, some 2 feet by 18 inches, and fully 6 inches in depth, with a slight depression towards the centre, strewed over with withered leaves.

My friend, Captain G. F. L. Marshall, R. E., furnishes me with the following note on the nidification of this species:—

"Builds in the Saharunpoor district in the end of May and beginning of June. The nest is commenced about the end of April, and the young are hatched by the middle of June.

"The nest is placed in a fork near the top of a large tree, about 35 or 40 feet from the ground. All that I have found have been in the line of trees along the bank of the Eastern Jumna Canal, on the outside one farthest from the water, and always in Sheesum trees. I found four nests, one with young (on the 10th June), and three with eggs on the 22nd of May and 3rd and 11th of June. All the eggs were hard-set. The nest is a large circular platform-like structure of sticks, with a few dead leaves in the egg receptacle, but no other lining. I noticed no remains of food in any of them. The diameter of the whole nest was about 20 inches, and the interior depth about 2 inches. I have never found more than one egg in any nest. The egg now before me is a perfect, but very blunt oval; of a slightly yellowish white ground, somewhat profusely spotted and blotched with rather faint yellowish brown, and a pale washed-out purplish brown, which latter colour greatly predominates: the egg is absolutely glossless."

An egg which I owe to Captain Marshall's kindness is a broad oval in shape, and has a greyish white ground, richly blotched and spotted with pale purple. This egg is somewhat larger in every way than that figured by Mr. Hewitson; it has no gloss, and when held up against the light, the shell, as in all these Eagles, is a bright sea green.

Other eggs which I have obtained or seen have been less richly marked, but have varied little in size or shape. As a rule, they seem to be more richly marked than those of *vindhiana*.

The five eggs that I have measured have varied from 2·5 to 2·85 inches in length, and from 1·94 to 2·2 inches.

29.—*Aquila vindhiana, Frankl.*

The Indian Tawny Eagle breeds throughout the drier portions of continental India. Here and there this species and the Spotted Eagle may be found breeding in close proximity; but this is only on the borders of their respective territories, and as a rule it is just in those well-drained, open, dry districts, where *nævia never* breeds, that the Tawny Eagle most delights to rear its young.

In different parts of Upper India, it lays from the middle of November to the middle of June; but the great majority, I think, lay in January. Out of one hundred and fifty-nine eggs, of which I have a record, eighty-three were taken in January, thirty-eight in December, twenty-eight in February, the rest in November, March, April, and June. Only *one* in this latter month, and none at all in May. The very hot dry weather puts a stop to the laying of most species belonging to the raptorial and in-sessorial groups. The nest is always, as far as my experience goes, placed on trees. I have never met with one placed on rocky ledges, although I have found them on trees at the foot of, or near to, precipices, which contained apparently most "eligible sites."

They build a large flat nest of sticks, between 2 and 3½ feet in diameter, and from 4 inches to 1 foot in thickness, according to situation. The nests are generally lined with green leaves, sometimes with straw or grass intermingled with a few feathers, and sometimes have no lining at all. They are generally placed at the very top of the tree, and though I have found them occasionally on Peepul and Tamarind trees, the great majority were on moderate-sized, but dense Babool trees, standing apart in the midst of fields or low jungles.

Mr. William Blewitt remarks, that he found great numbers of the nests of this bird in the neighbourhood of Hansie, during January, February, March, and April 1868. None contained more than two eggs, and many of these latter were considerably incubated. The nests were without exception in *dense* Keekur trees (*Acacia arabica*) at heights of from 16 to 24 feet from the ground. The nests, sometimes loosely and at others densely constructed, were composed of twigs and small branches of Keekur, Ber (*Z. jujuba*) and similar thorny trees; more than one had a thin lining of grass or leaves, but the majority had no lining. In diameter (excluding straggling ends) the nests varied from 16 inches to nearly 2 feet, and in depth from barely 4 to nearly 9 inches.

During the latter part of 1868, great scarcity prevailed in Hansie and the whole neighbouring country, owing to the failure of the rains. Fodder, especially, was unprocurable, and throughout vast tracts, all the Babool, Ber, and Peepul trees were entirely denuded of their foliage, in order to feed the cattle. The result was that *A. vindhiana* entirely deserted the neighbourhood, and where in 1868 with but little trouble Mr. Blewitt met with *scores* of nests, he during 1869 only succeeded in finding two!

My friend, Captain G. F. L. Marshall, R. E., writing of this species, says:—"Very common in the Saharunpoor district. Is said to catch fish by all the natives; but I do not believe it. The native name is Machopa, or Machoka. It builds on trees, a nest of sticks and lays two white eggs, sometimes pure, sometimes blotched with dusky and brownish. It commences building in the end of March, but the eggs are not laid till the end of May; and I have taken fresh eggs up to the middle of June, and at Shamlee, in the Mozuffernugger district, I took five nests early in June, all with fresh eggs."

"In the Central Provinces," writes Mr. R. Thompson, "this is a common bird in the upland forests. It lays here in November and December."

Most birds, when they have eggs, even before they begin to sit, watch their nests closely. I have, however, repeatedly found nests of this Eagle, containing one or more eggs, with no parent bird anywhere near. I have several notes of this. I quote one:—

"On the Western Jumna Canal, near Hissar, on the 15th December, I found a large nest on the top of a Babool tree. The nest seemed rather fresh, and therefore, though there was no bird near, I sent up a man to examine it. It proved to contain two large eggs. Whilst the man was near the nest, no bird made its appearance, only after we had waited about a quarter of an hour, a large *vindhiana* in dark plumage, soared slowly past, at a great height overhead. This was about 2 o'clock in the afternoon. We did not touch the eggs, called the man down, and withdrew to watch the nest; hiding ourselves, carefully some little distance off. It was not till the sun was setting that this same *vindhiana* suddenly made its appearance, and descended to the nest, where it was shot. It was a female, and from first to last, we saw nothing of the male."

Some one recently remarked that the nestlings had never been described. I have taken many; the whole plumage is rufous brown, purer on the head, more earthy on the mantle and paler below, each feather with a narrow black central stripe or line.

The normal number of eggs seems to be two, but it is by no means uncommon to find three. The eggs of this species appear to me to vary prodigiously in size and shape; but it is not improbable that this excessive apparent variation is due to the enormous series I have before me. I have taken more than a hundred of this bird's eggs myself, and from first to last have had more than double this number sent me by other observers. Normally this bird's egg is a somewhat broad oval, slightly pointed towards one end, and answering both in size and shape very well to Dr. Bree's figure of the Tawny Eagle's egg; very often, however, the eggs are somewhat smaller than this, and occasionally a great deal larger; some are very long and pointed. A pair which I took in the Goorgaon District (shooting the old bird) are fully as broad as the egg in Bree's figure, and as long as his figure of the Lammergeyer's egg; so that they appear long and narrow; the cubic contents of these must be fully twice that of some of the smaller specimens; they each contained a fully developed chick, ready to hatch off. A few of the eggs are nearly spherical, but the broad oval greatly predominates. The ground colour of the eggs is the usual greyish white, unspotted in about half the specimens, and exhibiting more or less conspicuous markings in others. Of the markings, the most common are a few large blotches and splashes of yellowish brown accompanied by pretty numerous specks or spots of the same colour, distributed pretty evenly over the whole egg. In some, the blotches are more extensive and numerous, and exhibit a tendency to cluster towards one end more than the other, and the colour becomes a reddish brown, or in some a purplish brown, while in others all three colours are mingled. In no egg that I possess is more than one-third of the surface covered with markings, and, as a rule, even the richest coloured eggs (and these are comparatively rare) have not above a seventh or eighth of the surface of the egg covered with markings.

Elsewhere I have remarked: "The eggs vary extraordinarily both in size and shape from a very long oval, much pointed at one end, to almost a sphere; but the ordinary type is a rather broad oval, slightly narrower at one end. In colour, they are most commonly white, with *very* faint tinge of bluish green: but many of them are more or less streaked, spotted, or blotched, with different shades of brown, or reddish brown, and occasionally purple of varying intensity, and here and there, one may be found richly marked with sharply defined spots and blotches of bright, though slightly brownish, red. Many of the eggs, when taken from the nest, have a faint gloss on them; but they lose this by washing, and the eggs become so soiled during incubation, that it usually *is* necessary to wash them. The texture is generally close and compact; the egg lining is a pure sea-green."

In size the eggs vary from 2·35 to 3·25 inches in length, and from 1·8 to 2·25 inches in breadth; but the average of one hundred and fifty-nine eggs measured was 2·63 by 2·11 inches.

30.—*Aquila hastata, Less.*

The Long-legged Eagle appears to breed in many parts of continental India. I know of its breeding in the Raipoor and Sumbulpoor Districts, in the neighbourhood of Calcutta, in Dacca and again in the extreme north-west, in the Agrore Valley. Here it was, not far from Abbotabad, that Capain Unwin, of the 25th Goorkhas, found two nests on the 29th of April and the 6th of May, the one containing two, the other a single egg; all of which, together with three of the parent birds, he kindly sent me. Of one of the nests he writes as follows:—

"This nest was found on the 6th of May, placed on a Cheer or Fir tree, in a fork about 30 feet from the ground, and the old bird was shot as she sat alongside the nest. The tree was situated on a sloping hill-side, rather detached from the forests. The nest was constructed of sticks, large towards the exterior and smaller towards the interior of the nest. It was about 18 or 20 inches thick, and 2½ feet broad, with a depression of about 3 inches deep in the centre. It contained a single, fresh, large, dead white egg, spotted here and there with deep reddish brown, and with a few very pale pinkish spots sparsely scattered over the shell. The Goorkhas' name for the bird is *Kaka-Kool;* they declare it to be a snake-eater, but the female above alluded to had nothing in the stomach but a couple of rats which appeared to have been recently swallowed."

The three eggs sent seem scarcely distinguished from those of *A. vindhiana,* though possibly they may on the whole be somewhat broader and more frequently spotted and blotched. Of the three eggs sent, one is absolutely devoid of markings, the second is *very* thinly spotted all over with yellowish brown and very pale purple, and towards the large end there are two or three large reddish brown smears; the third egg is profusely blotched about the large end with reddish brown, and has two or three large blotches of the same colour on another part of the egg. The ground colour in all is a kind of greyish white, and the shell is entirely devoid of gloss.

In length these eggs vary from 2·4 to 2·55 inches, and in breadth from 1·95 to 2·1 inches.

31.—*Hieraetus pennatus, Cuv.*

I have never myself found or seen a nest of the Booted Eagle.

My collector, Mr. Theobald, found a nest of *H. pennatus* on the 21st February 1869, at Hurroor, in the district of Salem, and from it shot a couple of old brown birds. "The nest," he says, "was on the branch of a high Banyan tree (*Ficus indica*), about 40 or 50 feet from the ground. It consisted of dry twigs, and was in shape a circular platform, with a slight depression in the centre, devoid of lining." The eggs were two in number, only one of which reached me in safety. This one is a very broad oval, almost exactly the same size as the one figured by Mr. Bree. The ground is a dead white, devoid of gloss, and pretty thickly blotched and streaked throughout with reddish brown. The egg reminds one much of some of the richer coloured eggs of *Milvus govinda,* but the markings are smaller, and the shell, when held up against the light, is a very pale sea green, much lighter than in any of the numerous specimens of *M. govinda* that I have yet examined. It measures 2·13 by 1·78 inch.

32.—*Heteropus malayensis, Reinw.*

The eggs that I possess of the Black Malayan Eagle were sent me along with the parent birds, one nest containing three eggs, from Bussahir taken on the

4th of January, the other, from Kooloo, containing a single egg and taken on the 7th of the same month. Both nests were on ledges on the face of cliffs. Independent of other evidence, there is no other bird I believe in these districts that could have laid these eggs. In shape they are broad and nearly perfect ovals, very slightly, if at all, compressed towards one end. The shell is rather coarse and rough, quite devoid of gloss, and when looked into against the light, the egg appears of a peculiar light, slightly yellowish green. The eggs of the one nest are greyish white with only a very few brownish specks and spots towards one or other end; the single egg is richly blotched and mottled all over (most densely towards the small end) with somewhat brownish red, and is one of the handsomest Eagle's eggs I ever saw. Although so different in colouring, the texture of the shell and its peculiar tint when held up against the light is the same in all the four eggs; and coming as they did from different localities and collectors, accompanied in each case by one of the alleged parents, I entertain little doubt of their authenticity. In length they vary from 2·5 to 2·68 inches, and in breadth from 1·88 to 2·02 inches.

33.—*Pseudaëtus Bonellii, Tem.*

Bonelli's Eagle lays, in the plains, in the latter half of December and in January; but in the Himalayas it sometimes lays, I believe, as late as April. The nest is usually placed on ledges of precipitous earthen or rocky cliffs, and in the plains I think preferentially in the immediate neighbourhood of some large river or jheel. I have repeatedly seen their nests in the high clay cliffs of the Jumna and Chumbal in the Etawah District, and I found a pair breeding in the ruined and cyclopean walls of the ancient Togluckabad, south of Delhi. Many pairs were breeding in the precipices of the salt range near the Mayo Mines when I last visited these, and I found several of their nests in the rocky cliffs, overlooking the gorges of the Gaj and the Nurree Nai in the hills dividing Sindh from Kelat.

Occasionally, however, they build on trees; and I found a nest containing a single egg in a large Peepul tree near Bhurtpore.

The nest (as I said before, commonly placed on some convenient ledge or suitable recess in the cliff's face) is very large, from 4 to 6 feet in diameter, and is composed of thickish and moderate-sized sticks, varying from 1·5 to 0·5 inch in diameter. The nest itself varies in thickness from a few inches to a couple of feet, and being always finished off to a level, when placed, as often happens, on a more or less shelving declivity, is much thicker exteriorly than interiorly. In the nests that I have examined, branches and twigs of various kinds of thorny *Acacias* were the chief materials used. In no nest that I have seen, not even in that one mentioned as found on a Peepul tree, was there any very perceptible depression in the interior of the nest. In the centre of the platform, a circular space, of some 18 inches in diameter, is commonly smoothed over with a thin layer of green twigs; and in the centre of this again, a smaller space of perhaps 1 foot in diameter is carefully carpeted with green leaves, those of the Neem, Peepul, Peeloo (*Salvadora persica*), and other trees being apparently indifferently made use of.

Normally, they lay two eggs, but I have once found three in a nest, and on two occasions have known of a single, much incubated, egg being met with.

Elsewhere (in the Ibis) I have thus described the taking of a nest of this species :—

" About a mile above the confluence of the clear blue waters of the Chumbal and the muddy stream of the Jumna, in a range of bold perpendicular clay cliffs, that rise more than 100 feet above the dry-weather level of the former river, I took my first nest of Bonelli's Eagle. In the rainy season, water trickling from above, had, in a way trickling water often does, worn a deep recess into the face of the cliff, about one-third of the way down. Above and below, it had merely broadly grooved the surface, but here, finding a softer bed, I suppose, it had worn in a recess some 5 feet high and 3 feet deep and broad. The bottom of this recess sloped downwards, but the birds, by using branches with large *twiggy* extremities, had built up a level platform that projected some 2 feet beyond the face of the cliff. It was a great mass of sticks, fully half a ton in weight, and on this platform (with only her head visible from where we stood at the water's edge) an old female Eagle sat in state. This was on Christmas Day ! It is not many holidays a working official gets in India, or at least can afford to give himself, and part of mine are generally spent in the open air, gun in hand.

" At the foot of the cliffs is a talus of rough blocks of clay, that it will take many a flood yet to amalgamate, and up this I crept until I was only about 60 feet below the nest. Here, however, I could see nothing of the bird. I shouted and kicked the cliff, the men below screamed, threw fragments of kunker (one of which very nearly blinded me) and by various signs attempted to indicate to Mrs. Bonelli that a change of locality was desirable. Serenely sublime in the discharge of her maternal duties, that lady took no notice whatsoever of the uproar below; accustomed to the passage of noisy boat crews, and, like some other sovereigns who sit calmly aloft, unable to realize that it is really against their sacred selves that the mob beneath is howling, the Eagle never moved. Beaten at our first move, we changed our plan. I crept down the talus, and sent up a man to throw down dust and small pieces of earth (we were afraid of breaking the eggs), in the hopes of driving her off the nest. Luckily the very first piece of earth hit her, then came a shower of sand, and concluding I suppose that the cliff was (as it often does) about to fall, she flew off the nest with a rapid swoop. Bang, bang, both barrels, 12-bore, No. 3 green cartridge, full in the chest (as the body showed when we skinned it), and yet with a half fall, like a tumbler pigeon, through some 15 or 20 feet, she recovered herself and swooped away as if unhurt, close along the face of the cliff; 100 yards further I saw a tremor, then in a moment it was clear that she was in the death struggle; she began to sink, and an instant after fell over and over on to a flat block of clay with almost incredible violence. The dust flew up from where she fell, as if a shell had dropt there, but as a specimen, the bird was scarcely injured.

" We had hardly secured the female, after the manner of bird-stuffers, plugging nostrils and shot holes, stuffing throat and smoothing feathers, when we heard a shrill creaking cry and saw the male coming straight for the nest with a bird (which turned out to be a *Turtur cambayensis*) in his talons. Coming to the nest, the bird seemed surprised to find it empty, it took no notice whatsoever of us, nor did it apparently catch sight of its mate, stretched out with her white breast uppermost on the deck-like platform of our barge, but it straightway settled itself down in the centre of the nest and became entirely invisible. Again tiny stones were thrown down, and after standing up, staring proudly round and stalking to the edge of the platform, where the was hailed with shouts, the male bird flew off slowly, swooping down to within 20 yards of where I sat, and the next moment dropped stone dead with only a loose charge of No. 6 through him.

He was a much less bird than the female. She measured 29 inches in length, nearly 70 in expanse, and weighed close on 6 lbs. He was only 26 in length, 62 in expanse, and about 4 lbs. in weight.

We had now to get the eggs, if eggs there were, because as yet we could only guess and surmise in regard to these. Just above the recess, the cliff bosomed out with a full swell for some 2 or 3 feet, effectually preventing any one's looking down into the nest from above, or, except by an accidental cannon in the broad groove, such as my boatman had made by a fluke at the very first shot, from even throwing anything down into it. Above the swell, the cliff was as nearly perpendicular as might be, and it really did seem as if getting into that nest would be no easy matter. However, some 6 feet east of the nest, passed a sort of fault or crack which traversed the cliff at an angle of about 45 degrees, and down this, a stout rope round the waist, with infinite trouble and no little danger, a way was found after all to the nest. Once there, it was a firm platform of sticks at least 5 feet by 3½. In the centre of this, a circle of about 20 inches in diameter was smoothed over with fine green twigs of the Peeloo (*Salvadora persica*), and on this again, a circle of about a foot in diameter was smoothly spread with the green leathery leaves of the same tree, and on these reposed the coveted treasures, two fresh eggs. One of these eggs was bluish white, blotched and speckled very feebly, but thickly towards the larger end, with *pale* reddish brown. It measured 3 in length by 2·19 in breadth. The other was almost pure bluish white, with scarcely any traces of markings anywhere, and measured 2·81 inches in length by 2·13 inches in breadth.

A few days later, in similar cliffs a few miles higher up, I found another nest. This time, however, the platform was much larger, and was only about 6 feet below the top of the cliff. One could look into it without the slightest difficulty, and a jackal could assuredly have made his way there with ease, as even I got down to it without help and without a rope. The platform of sticks was fully 5 feet in diameter; there was the same smooth patch of twigs and smaller smooth circle of green leaves, this time of the Peepul (*Ficus religiosa*), and, as in the former case, on the leaves about 5 inches apart, lay two fresh eggs. These had a bluish white ground, blotched all over, but thinly and very feebly, with pale dingy reddish brown; and they measured, the one 2·62 by 2 inches, and the other 2·51 by 2 inches. The eggs were therefore considerably smaller than those above described, while the female, which I shot as she left the nest, was a much younger and smaller one than the magnificent bird first killed."

Captain Hutton, writing from Mussoorie, says: "*Eutolmaetus Bonellii* remains here all the year, breeding in places similar to those selected by *G. barbatus*, but although we have several times found the nests, we never could get at them. It stoops to fowls and is destructive to the larger game birds."

Mr. R. Thompson has the following note in regard to this species in Kumaon and Gurhwal:—"I have never been up to examine the nests of these birds, because they are always placed on the most inaccessible precipices, but I can vouch for the time of their breeding, *viz.*, from April to June. I had a nest for several years in view, but never could get at it; it was on a steep precipice and none would volunteer to assist me. That the birds had their nests there was more than established, because during other periods of the year, the pair used to carry off my poultry and eat them wherever they found a place suitable; but in the breeding season they always carried their plunder to the nest.

"One year I caught the young birds, two in number, the first in July, and the second in August.

"I have subsequently caught young nestling birds at Nynee Tal along with the old ones, thus taking the whole family. This was in the month of August.

"In February last, I saw a pair apparently courting, which flew to and out of a large nest placed in a tree in the forest, at a place called Bunderjewrah, 8 miles east of Ramnuggur."

Captain Cock sends me the following account of a nest of this species which he obtained near Dhurmsala (in the Himalayas):—"Found a nest on the 25th January 1870; it was placed in the middle of a Cheel tree (*Pinus longifolia*) on the place where three large branches forked out. This was such an unusual situation that I shot the old bird to be quite sure that it was *Eutolmaetus Bonellii.* The Cheel tree stood at the edge of a very lofty precipice, about 40 feet from the bottom of which was a nest of *Gypaetus barbatus,* and there were plenty of likely precipices all about, so I could not understand their building in this tree. The natives informed me that they had done so for years. The nest was a large platform, and the eggs, two in number, were laid on a lining of fresh green Cheel leaves. The eggs were both white, one the usual shape, the other a very long blunt oval. Both eggs were quite fresh, for I watched the nest daily till they were laid."

Writing from Kotaghery in the Nilghiris, Miss M. Cockburn says: "I have been successful in obtaining the eggs of this fine bird, and was present when they were taken. The nest placed on a ledge in the face of a precipitous cliff consisted entirely of a large quantity of small branches of trees which had been the accumulation of years, as the birds invariably return to the same place to build; as a lining to this uncouth nest were added innumerable green leaves. In this same nest I had often had the eggs destroyed by throwing stones into it from the top, and (they played such havoc in my poultry-yard!) several times the young ones had been pushed over the cliff with a long bamboo, in hopes of the parent birds leaving the neighbourhood, which, however, they still continue to frequent.

"The eggs are very large and thick-shelled, of a whitish colour, with a few indistinct light brown marks, almost entirely confined to the largest end. Notwithstanding every care one egg was knocked against the rock while half-way up and of course broken. This was unfortunate, as there were only two, this bird never laying more, and sometimes only one. When I reached the cliff the Eagle instantly covered the eggs with leaves, and darted from the nest in a straight line, and after having flown to some distance made two or three wide circles in the air and disappeared. In about half an hour it returned and soared above, and beneath me, but never attempted to prevent my depriving it of its eggs. These eggs were taken in the month of December. These Eagles only breed once a year, unless deprived of their eggs or young, in which case they will lay again."

I have now seen a good many eggs of this species. All I have seen were moderately broad ovals, varying slightly in size and in the comparative length of the minor axis. Some are unspotted, some are more or less faintly blotched, streaked, or spotted with pale yellowish or reddish brown, while others, as Mr. Brooks correctly remarks, "are sparingly blotched and spotted with bright reddish brown, sometimes intermixed with blotches of light reddish grey."

I have never seen a richly coloured egg of this species. The ground colour is that of all Eagles of this type,—a pale greyish or bluish white, often becoming, during the course of incubation, much soiled and discoloured.

In size they vary from 2·56 to 3 inches in length, and from 1·93 to 2·22 inches in breadth, but the average of twenty eggs was 2·78 by 2·1.

34.—*Spizaetus caligatus*, *Raffles.*

I have never yet found a nest or seen an egg of the Changeable Hawk Eagle. My friend, Mr. R. Thompson, furnishes me with the following notes :—

" The breeding season commences in March, and lasts until the end of June, but they mostly lay in April and May. The nest is placed, at a height of from 40 to 50 feet from the ground, on large trees in dense woods, usually in a good game locality. The nest is a large round structure from 2·5 to 3 feet in diameter, much resembling that of the common *Aquila nævia*, a thick clumsy platform, composed of thick dry twigs and roots, with a central depression from 4 to 5 inches deep, lined with fine roots and stems. The eggs are usually two, but I have preserved no record of their appearance, and I have no specimens by me to measure or describe."

35.—*Spizaetus cirrhatus*, *Gmel.*

Of this species Mr. R. Thompson remarks: "The habitat of the Crested Hawk Eagle is in the uplands of Central India, extending east along the Vindhian Range as far as the southern portion of the Mirzapoor District. How far south of Nagpoor and west of the Puchmurrees it extends I cannot positively say; but here where I write from, the furthest southern corner of the Satpoorahs, it is abundant.

"Its nidification is similar to that of *caligatus*; it selects a tall tree in some good game locality, builds a huge nest of coarse twigs, and rears as far as I have yet observed, only a single young one, which is extremely noisy when being fed."

36.—*Spizaetus nipalensis*, *Hodgson.*

This beautiful species, Hodgson's Hawk Eagle as it has been appropriately designated, breeds, as far as I yet know, only in the Himalayas, laying from January to the early part of May.

Its nest, a large coarse stick structure, is placed upon some large tree, either hidden in a dense forest, or projecting from the face of some inaccessible cliff.

It lays two eggs, I think, as a rule, but single eggs are often found much incubated.

My friend, Captain Hutton, favours me with the following notes :—

"This species is common at Mussoorie, and occurs also during winter in the Doon; at Mussoorie it is a permanent resident, and most destructive to pigeons, fowls and game; its loud shrill musical whistle may often be heard far up in the heavens even when the bird itself is lost to sight. It breeds at about 5,500 feet of elevation, constructing a thick basket-like nest of twigs and small branches, placed on a lofty tree, often growing out of the fissure of a rock overhanging a precipice, which is apt to turn the head of any but a mountaineer, and to look into which reminds one of the bottomless pit! Nevertheless, we have on more than one occasion contrived to rob the nest. One of these was found on the 5th of March and contained one egg, which was left for the purpose of ascertaining whether the bird would lay another. A few days afterwards, on finding no addition, a man ascended the tree, which was of tolerably easy access, and the old bird making no warlike demonstration, the prize was secured. On attempting to clean it, however, it was found to contain a fully formed young bird. On another occasion, we did not rob a nest so easily. It was found on the 18th March, and contained two eggs, which were left to hatch. On the 1st of April, the nest was again visited and found to contain two young ones covered with a rufous-coloured down; on the 16th April, finding that one young one had fallen from the nest, preparations were made for lowering a man down the precipice to the root of the tree, which leaned ominously out of a cleft in the rock obliquely overhanging an awful chasm. On reaching the tree, the man began to ascend, but before he had reached the nest, one of the old birds made a dash at him and struck him sharply on the shoulder, causing the blood to flow. Nothing daunted, the man proceeded on his perilous course, under cover of one or two shots from above to scare the old birds away, but without the desired effect, for on the man's arrival at the nest another charge was made by the female who struck the poor fellow on the head and again caused blood to flow, but luckily the man's greasy linen skull-cap became firmly fixed upon the talons of the bird, which scared her to such a degree that, uttering a loud scream of alarm, she sailed away, rapidly followed by her mate, and the young one was then brought in safety from the nest. It was nearly half fledged, with small slaty coloured feathers, and grew to maturity in a large roomy cage, when it was set at liberty, and after hanging about the place to be fed for several days, finally took unto itself the wings of the morning and disappeared. These birds sometimes breed in the same nest for two or three years, and apparently only abandon it when it becomes old and rotten, when they select another tree whereon to construct a new habitation at no great distance from the other."

Captain Unwin found two nests of this species in the Agrore Valley; one, placed in a comparatively small Cheer tree, was made of dry sticks lined with a little grass, was about 2 feet wide and was built up with sticks from the fork where its base rested to a height of about 2½ feet. It contained a single young bird covered with white down, except the back and wings, which were thickly set with short black brown feathers. The other nest was also placed in a Cheer tree, but in a very large one, about 60 feet from the ground. This was on the 6th May. This nest was placed on a fork formed by several branches, was built up of sticks for nearly 3 feet, and was about 3 feet broad. It was lined with fine dried grass and hollowed out for about 5 or 6 inches in the centre. It contained a single young bird about three or four days' old, covered with soft white down.

Although I have, in former years, seen several of its nests, the only specimens that I now possess of the eggs of this species are, *first*, one taken near Mussoorie on the 8th March, which I owe to Captain Hutton. In shape this is a broad regular oval, almost symmetrical at both ends. The shell is coarse, dull and glossless; the ground colour a slightly greenish white, spotted thinly with reddish brown, and with numerous large blotches and streaks of very pale inky purple. It measures 2·78 by 2·23 inches.

Secondly, an egg procured in Bussahir on the 5th January! This is a somewhat smaller egg than the preceding, measuring only 2·6 by 1·9 inch. It is a very perfect oval, has a greenish white ground, is very sparingly spotted and blotched, almost exclusively towards the smaller end, with somewhat reddish brown, and exhibits traces of two or three large, but very faint, purplish clouds. When held up against the light the shell is of a peculiarly blackish green tint.

38.—*Circaëtus gallicus, Gmel.*

The Short-toed Eagle lays in the plains of Upper India in January, February, and March, and, according to Mr. R. Thompson, in April and May in the Gurhwal forests.

As a rule, its nest is placed on trees, but on two occasions in the Etawah District, we have found this species breeding on small platforms, in the face of the high clay cliffs of the Jumna.

In different localities, it varies in its choice of trees; where trees are plentiful, it will build on the topmost boughs of a very tall one, while in bare country, like Hurriana or Western Rajpootana, you will find the nest not half way up some stunted Neem tree, or scraggy thorny *Acacia,* a mere apology for a tree.

The nest is a large circular stick structure, some 2 to 3 feet in diameter and from 6 inches to a foot in depth, externally very loose and straggling, but composed of rather slighter materials than *vindhiana* generally uses, and with a rather deeper internal depression.

Some nests are entirely devoid of lining, rather finer twigs compose the floor of the internal depression and on these the egg reposes. Some nests again have the egg *bedded* in straw and grass, positively as if packed to travel; under some I have found a few green leaves spread, after the fashion of Bonelli's Eagle, and under many, a little grass. There appears to be no rule in this matter, season does not affect the question, nor, as far as I can see, locality; in the early part of January and late in March, in the Agra and Sirsa Districts, and in the far west beyond Jodhpoor, I have observed the same diversities in the internal arrangements of the nests.

I have taken a great number of the nests of this species, and many of my friends have found them also, but in no instance out of between forty and fifty recorded cases, did any of us meet with more than a single egg in the same nest.

When deprived of their egg, the Short-toed Eagles will hang for weeks about their desolated homestead, but apparently they never lay a second time, as many other species do.

Mr. W. Blewitt informs me, that he took nine nests of this bird in the neighbourhood of Hansie between the 18th January and the 26th February and four between the 6th and 26th of March. Some of the eggs were fresh; some, more or less incubated; but no nest contained more than a single egg. Eleven of the nests were on Keekur (*Acacia arabica*) trees, one on a Jhand (*Prosopis spicigna*) tree and one on a Seeshum (*Dalbergia sissoo*). The nests were placed at heights varying from 14 to 22 feet from the ground.

They were composed of twigs of the Keekur, Kheyr (*Acacia catechu*), and native Plum (*Zizyphus jujuba*). They varied in diameter from 14 to 24 inches, excluding straggling ends, and in thickness from 4 to 8 inches. Some were slightly and loosely put together; others were very densely and closely constructed. Most of them appeared to have no lining; but three were thinly lined with straw, two with leaves and one with fine grass.

Captain G. F. L. Marshall, R. E., writes to me:—

"Of this bird I have found but one nest. I found it on the 13th of March with one egg, and left it till the 6th April, in hopes that more would be laid, and when I took it at last, it was rather hard-set, so that probably the bird lays but one egg. The nest was in a Seeshum tree, so high up among the smaller branches that I reached it with difficulty; it was made of twigs and so loose in structure that I could see that there was only one egg from below, before I had reached the nest. The egg was well-shaped and pure dull white."

Mr. R. Thompson, writing from Gurhwal, says that the situation of the nest is "usually on the highest branches of a tall tree, in a moderately wooded country, and mostly in one standing by itself." He adds: "Breeds in the Patla Doon, and all along the lower open forests. During the pairing season, utters a loud and plaintive cry, usually when the pair are mounted high in the air, when they may be observed tumbling about and darting at each other in a most remarkable manner."

The eggs of this bird are typically broad ovals with a slightly pyriform tendency. They are of a pale, bluish white colour; bluer than those of any other of our Indian species of Eagle, and are, to judge from a very large series, invariably spotless: moreover, they seldom appear to be discoloured during the process of incubation in the way most other Eagles' eggs are. In my whole collection, only one egg is in any way as small as that figured by Dr. Bree, and more than one are all but as large as the egg of the Bald Eagle figured on the same page. The colour of the shell in this species when held up to the light is a peculiarly bright sap green, very different from the deep green of *Haliæetus Macei*, or the sea-green of *vindhiana*. In size they vary from 2·65 to 3·15 inches in length, and from 2·05 to 2·45 inches in breadth, but of twenty-seven eggs measured, the average was 2·9 by 2·3.

39.—*Spilornis cheela*, *Daud.*

The Crested Serpent Eagle, or, as it should perhaps more properly be called, the Indian Harrier Eagle, breeds throughout the Sub-Himalayan ranges and regions, as far west at any rate as Kangra, at heights of from 1,500 to 5,500 above the sea level, laying in March, April and May.

The species most common in the eastern portion of Central India from Ellore to Ranchi and probably throughout Central India is I think distinct (*vide* No. 39 *bis*).

The nest is, I believe, always placed on trees in the immediate vicinity of water, not at the top of the tree, but in some fork, as Capt. Cock says, "like that of the common Kite."

It is circular, loosely made of thicker or thinner sticks and twigs, and lined with fresh leaves or fine twigs, and roots of grass; it varies in size from 1·5 to 2 feet in diameter and from 4 to 8 inches in thickness.

They lay, I should say, usually only one egg, but in the Doon, where they are plentiful, natives assert that they not unfrequently have two young ones, and must therefore, if this be true, occasionally at least lay two eggs.

Capt. Cock, of Dhurumsalla, to whom I owe eggs of this species and many others, as well as much valuable information, sends me the following note in regard to the nidification of this species:—

"I have taken, or rather found, four nests of this species in the neighbourhood of Dhurumsalla, at heights of from 4,000 to 4,200 feet above the sea. The first, which I found on the 3rd of April, contained one semi-incubated egg, and was placed on a Mango tree, one of a clump of four, situated on the banks of a stream in tolerably well-wooded country. The second, found April

8th, contained one hard-set egg, and was also in a Mango tree, one belonging to a small grove, overhanging a tiny stream, in a dark, well-shaded situation.

"The third, found April 11th, contained a perfectly fresh egg; it was in a thick grove beside which a stream runs, and in which two old nests of this same species were also found.

"The fourth contained no egg, but on the 19th of April was complete and ready to lay in; this too was in a grove overhanging a stream.

"The nest is about half-way up the tree, not on the top, but placed, more like the nest of the common Kite, on some fork.

"It builds a peculiar and not very large nest. The nest are always made of the twigs of the tree on which it is placed, fresh twigs broken off by the bird, and the lining of the nest is of leaves of the same tree. No feathers, mud or other material, are used in the construction of the nest, which is about 1·5 foot across; the hollow in which the eggs are laid, is rather deeper than is usual with birds of this class."

Capt. Hutton sends the following note:—

"*Spilornis cheela.* The nest was found on the 10th of March at 5,500 feet of elevation; it was composed of dry sticks and small branches interlaced on a tall tree; on visiting it again, we found that some mischievous urchin had pulled it to pieces, which they are constantly in the habit of doing. This bird is common both in the Doon and hills, and where a pair take up their quarters, no Fowl or Pigeon can escape; I have had a dove-cot cleaned out over and over again by them. They are cunning hunters, one sweeping over the hill-side at no great elevation, while the other takes a higher line, so that let the Pigeon ascend or descend, he always finds himself between two fires, and unless he can find shelter in a tree, he is sure to be caught, as the pursuers decrease the distance between their lines and meet their victim at the point."

Mr. Thompson says:—

"This species breeds from April to June, building a coarse circular nest some 2 feet in diameter, composed of thick roots and stems, and lined with finer twigs and grass roots. The nest is usually placed on lofty trees, in well wooded, shady and watered ravines, or in the low Himalayan rice-lands and warmer valleys.

"I have found the nests of these birds in the lower valleys.

"They contained one young usually. I have never got the eggs."

The first two eggs that I obtained of this species, both of which were taken by Capt. Cock near Dhurumsalla, differed much in appearance. The one, though considerably larger than average specimens, and with a closer and less chalky texture, greatly reminded one of a common type of the eggs of *Neophron gingïnianus*; while the other, though of course smaller, in shape and richness of colouring resembled some of the more brilliantly coloured eggs of the Golden Eagle, such as Mr. Hewitson's second figure, in his third edition. The first egg had a dingy reddish white ground, with, at the large end, a ragged cap of dingy brick red, mottled with deep, blackish, blood-red. Beyond the cap, which was of the size of a rupee, streaks, specks and splashes, all having a longitudinal direction and looking much like a dense reddish brown shower falling from the cap, thickly covered the whole of the rest of the egg, growing less and less dense towards the small end.

The other had a *pure* white ground, and was thickly blotched, mottled and clouded with the richest blood and brick red. The big end, for the space of about a rupee, exhibits no markings but a few specks and spots, and though the rest of the egg is everywhere pretty thickly covered, the markings are most dense at the small end. In shape, the one egg is a nearly perfect ellipse, slightly pointed towards the small end, but the other egg is a very broad oval, very obtuse at the large end and scarcely less so at the smaller extremity.

Subsequently, I have seen many of these eggs and I may say generally that they are broad ovals, in some specimens somewhat pyriform and in many a good deal pointed towards the small end. The texture of the shell is much that of the egg of the common Kite; rather rough and glossless. The ground is bluish or greenish, more rarely reddish white; in some thinly and scantily speckled and spotted with reddish brown and red; in some sparingly clouded and dingily blotched with pale purple or purplish brown, in others with the markings denser and richer, forming at times a confluent brick-dust red cap at the larger end, mottled with deep red, and the whole of the rest of the surface thickly streaked and speckled and spotted with brownish red and purple.

In length, they vary from 2·62 to 2·88 inches and in breadth from 2·12 to 2·25, but the average of a dozen eggs is 2·78 by 2·2 inches nearly.

39 bis.—*Spilornis minor*, *Hume*.*

The Lesser Indian Harrier Eagle received which I have as yet, only from Ellore, Raipoor, Sumbulpoor and Dacca and intermediate localities, differs perceptibly from *S. cheela* of Upper India; the wings of the latter vary in the males from 18·5 to nearly 20 inches, and in the females from 19·5 to nearly 21; while in this present species they vary in the males from 17 to barely 18 inches, and in the females from 18 to 18·5 inches; the lower parts also are somewhat less conspicuously occelated, and the barring on the breast, so conspicuous in adult *cheela*, is almost entirely wanting. Mr. Blanford, to whom I owe one specimen, suggested that this might be *S. spilogaster* of Blyth, and I myself at one time adopted this view, but Blyth himself identifies this with *S. Elgini* of Tytler, which however he then considered the same as *bacha*, and in none of which the wing exceeds 15 inches; moreover, Blyth remarks of his species that it has a "less developed crest, and much less of black upon the crown, the tail markings quite different, having the black subterminal band conspicuously less broad;" now this is in no way applicable to our present species, which, taking the relative sizes of the two into consideration, has quite as fully a developed crest, quite as much black in the crown, and very nearly, if not quite as broad, a subterminal tail-band. This species cannot possibly therefore be *S. spilogaster*.

The present species breeds in the neighbourhood of Raipoor, where, in May, Mr. F. R. Blewitt obtained a nest containing two eggs. He says: "When the nest was robbed, the female was sitting on the eggs, and the male was perched on a branch near to the nest. The nest was near the top of a large Peepul tree, between the forks of a branch, overhanging a small stream. The nest was composed of prickly and other twigs, some 20 inches in diameter and 4 or 5 in thickness. It was densely lined with green leaves, Peepul and

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* Since this was in type, Lord Walden has suggested that if distinct, this species must stand as *S. albidus*, Cuv.

Mango. These were formed into a pad, some 12 inches in diameter and fully 2 inches thick."

The eggs are of somewhat the same type, but decidedly smaller and feebler coloured than those of *cheela*. They are very regular ovals; the ground a dull white and totally glossless, and the texture of the shell, as in the last species, rather coarse and chalky. The one is rather thinly speckled and spotted all over with very dull, dingy brownish red; the other has about half a dozen tiny spots of this colour, and a number of very pale washed-out brownish purple clouds, almost confined to the two ends, large at the large and small at the small end. They both measure 2·68 inches in length, and 2·05 and 2 inches in breadth, respectively.

41.—*Polioaëtus ichthyaëtus, Horsf.*

I have myself never yet seen an Indian specimen of the Bar-tailed Fishing Eagle from any locality westward of Nepal, though I have it from Sikhim and Rangoon; it is the next, and not the present, species which is so common along the bases of the Himalayas, from Kumaon to Afghanistan. Dr. Jerdon had never clearly discriminated the next species, but he noticed its distinctness from the present one directly I showed him a specimen; so that, I think, we may accept his remarks as to the breeding of this species, as really referring to the present and not the next species.

He says: "I found its nest on several occasions; once near the Nerbudda in a large tree; again, near Saugor, on a tree on the top of a height overlooking a large tank; and in a tree on the skirts of a village near the Ganges, opposite Rajmahal, I found a whole colony of nests of this Eagle. The nest is a very large structure of sticks. In one nest there were unfledged young; the others were empty."

Although I have never yet seen specimens, I have little doubt that it is the present species that is found in Southern and Central India, as well as Burmah, &c.; and that the next species—*plumbeus*, Hodgson—is confined to the Himalayas westward of Sikhim and their immediate neighbourhood.

41 *bis*.—*Polioaëtus plumbeus, Hodgs.*

Some four or five years ago, Dr. Jerdon, to whom I showed the only specimen of the Himalayan Fish Eagle I then had, declared that he could not understand the barless uniform brown tail, which characterizes this species, and which, with its smaller size, sufficiently distinguishes it from the preceding: later, Mr. Brooks obtained specimens, and somehow convinced himself that this species was identical with *P. humilis*, Tem.; this, however, is a mistake. I have myself examined both sexes of this latter species, and find the wings vary from 14 inches to 15·5 inches. Mr. Gurney gives the measurements of the specimens in the Norwich Museum as 15·25 inches and 15·5 inches; and though he was not aware that this was the case, these are both undoubtedly females. The wing of the female in the Leyden Museum measures about 15·3 inches; of the male about 14·25 inches. Mr. Blyth gives the wing of the specimen he obtained from Singapore as 14 inches. From all this it is abundantly clear that the wing of *P. humilis*, Tem=*nanus*, Bl., varies from 14 inches to 15·5 inches, according to sex. In this present species the wings of the male vary from 16·5 inches to 17 inches, and the females from 17·0 to 18·5 at least. It is, I think, unnecessary to urge further the distinctness of these two species.

The present species occurs along the southern faces of the Himalayas, for the most part at low elevations only, from Hazara to Sikhim. That this bird is "*plumbeus*," Hodgson, this gentleman's drawings show. That the adult has no white on the tail, my large series and Mr. Hodgson's drawings and notes prove. That it is much smaller than Horsfield's bird is clear. In the Transactions of the Lin. Soc., he gives the length of his species as 28 inches; elsewhere he gives the dimensions of the largest female, length 32, expanse 72. The present species varies in length (measurements in the flesh) from 22·5 to 24·5, and in expanse from 56 to 60.

The Himalayan Fish Eagle, generally, I believe, lays in January; but in the valleys of Kumaon and Gurhwal, where it is, I know, far from uncommon, it is said to lay as late as April.

It builds invariably, as far as I have yet observed, on large trees situated on the bank of some river, or in the immediate proximity of some considerable piece of water. It constructs its own nest, returning like the Golden Eagle, year after year, to the same spot, and each year adding fresh materials, so that the nest, a very large one to begin with, grows in time to an enormous size, reminding one of Wilson's descriptions of those of the Osprey. Stout sticks and small branches, mingled with twigs and grass roots, are the principal materials; but weeds and coarse grass help to fill up the interior, in which, as in the case of Bonelli's Eagle and others, a thin layer of green* leaves is commonly spread for the eggs to rest on. The eggs are normally three in number; but I have twice seen only two eggs in a nest, in both cases fully incubated.

Captain Cock sends me the following note from Hussen Abdul in the extreme North-West:—

"The nest of this species is a very large structure of sticks, in fact the biggest nest that I have known of. I found one on the top of a high thorn tree on the banks of a river. When I first visited the nest it was empty, but the bird was sitting on the tree near it. I again visited the nest about a fortnight later, and found three eggs in it. The nest was about 5½ feet in height, about 4½ in diameter, and but slightly hollow. There were lots of leaves in the nest quite fresh. The leaves belonged to some small shrub (the leaf itself was a very small one), and were evidently placed there to make a softer bed for the eggs. The birds had built in the same tree for an immense time, but at length the tree was blown down, and they built on the next biggest tree to it, and have continued for the last few years to nidificate there. The eggs were dirty white, similar in shape and size to the one sent to you.

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* It is probable that the object of laying the eggs on green leaves is to secure a certain amount of moisture for the shells.

Eggs artificially hatched have, we know, to be daily sponged with a moist cloth. Great numbers of birds leave their eggs for a short time about sunrise to feed in grass and jungle, and return all "dewy-breasted" to their nests, so that I have taken Pea-fowl's eggs quite wet from this cause. But how is sufficient moisture secured for eggs laid, like those of the Sand-grouse, on the bare, absolutely dry sand, whose parents feed in the dryest ground, (never even when they drink, wetting their feathers in the slightest) and return dry-breasted to their eggs?

The birds did not exhibit any anger when their eggs were taken, but the female flew round and round a few times."

Captain Unwin remarks :—

" I found a nest of our Himalayan Fishing Eagle in the neighbourhood of Huzara on the 27th February 1869. The nest was situated in a large Tulip tree, about 35 feet from the ground. It was built of sticks, stubble, weeds, and coarse grasses, and was about 2½ to 3 feet in diameter. It contained two young birds. The villagers stated that the old birds arrived every year about November. The probable age of the young was four or five weeks; they were unable to fly, though one was pushed outside the nest. I subjoin the dimensions and a brief description of one of these young birds which I took from the nest. Later, while watching the tree through a glass from a distance of some 150 yards, I saw one of the old birds arrive with a fish, I should think nearly 2lbs. in weight, in its claws."

My friend, Mr. Thompson, writes to me from Gurhwal that these birds " breed from March to May. The nest, which is a large structure of small sticks and twigs loosely put together, is usually placed in a tree at a convenient distance from the water, and at no great height from the ground. I have found their nests on the Kossilla River, at Oomta Dabee, in the Patlee Doon, on the Ramgunga River; Kotree Doon on the Sunnai River; and lastly above Hurdwar on the River Ganges. They lay from two to three large white eggs, smaller than those of *Haliaetus Macei.* Three appears to be the normal number of their eggs. During the breeding seasons, the birds utter at intervals a loud, yet plaintive cry, especially whenever one of them approaches the nest whilst the other is sitting in it. The male during this time is assiduous in his attentions, and the meeting of the pair on his return from fishing excursions always appears to call forth fresh cries. About the middle of April the eggs are laid, and are hatched during the following month. These birds are generally distributed over the rivers and larger streams of the Sub-Himalayas, remaining on them throughout the year."

The only egg that I now possess (which I owe to Captain Cock) is a broad and very perfect oval in shape. In texture, it is rough and pitted, but it nevertheless has a slight gloss. It is a perfectly unspotted egg, and though in places somewhat soiled and discoloured, must, when fresh, have been a nearly pure, milk-white. Held up against the light, the shell is even a darker green than that of *H. Macei*; in fact it is almost black. Whether this character is general, or peculiar to the single specimen I now possess, I cannot of course decide. I have had many of these eggs in former years; but I did not then, unfortunately, collect specimens.

Five eggs, of which I have recorded measurements, varied from 2·72 to 2·8 inches in length, and from 2·1 to 2·15 in breadth.

42.—*Haliæëtus Macei, Cuv.*

The Indian Ring-tail or Fishing Eagle (as we must term the present species, if it be really, as Mr. Gray considers, distinct from *H. leucoryphus*, Pallas' Sea Eagle,) lays from the beginning of November to the early part of February. The greater number of these birds, however, lay in December; and most of the nests that I have examined later than the 15th of January have contained young ones.

They build on large trees, on the Peepul (*Ficus religiosa*) by preference, I think, but also on many other kinds, Sheeshum (*Dalbergia sissoo*), Banyan (*F. indica*), &c. The trees that they select are almost invariably solitary ones, situated either on the banks of some river, or beside some considerable jheel. In Upper India, I do not know a single large jheel, which retains water in it as late as February, where a pair of this species does not breed; and all down the Jumna, Ganges, Chambul, Indus, Chenab, Jhelum, and Sutledge, wherever I have been, I have invariably met with at least one pair every 3 or 4 miles, and in particular localities every ½ mile!

The nest is a huge platform of sticks, some of which are often as thick as a man's arm, with a superstructure of thinner sticks and twigs, and with only a slight depression towards the interior, which is lined with fine twigs and green leaves, occasionally intermingled with rushes and straw.

The nest is usually placed in a broad fork, near the very top of the tree, on branches that seem scarcely strong enough to support the huge mass, and is sometimes occupied by the same pair for many successive seasons.

I do not think that this species ever takes possession of other birds' nests. It either builds a new one for itself, or repairs one formerly belonging to it, even though this may in the interim have been usurped by *Otogyps calvus* or *Ketupa ceylonensis*, both much addicted to annexing the poor Fishing Eagle's laboriously-constructed nest. I say laboriously constructed, because I once watched a young pair constantly occupied for a full month building a new nest, which they were still at work finishing off when I left. Nothing can seem rougher or more rugged than their nest when finished; and yet out of every four sticks and branches that they brought, they rejected and threw down at least three. Both birds brought materials, and side by side the pair would work away, throwing down almost as many sticks as they had brought; then apparently they would quarrel over the matter—there would be a great squealing—and one would fly away and sit sulky on some cliff point near at hand; after a time the one left on the nest would go off in quest of materials. Immediately, the other would drop softly on to the nest and be very busy (though what they did, except lift a stick and put it down in the same place, it was impossible, even with a good glass, to make out) till the absent bird returned, not unfrequently, with a fish instead of a stick.

One curious point about these birds is, that, unlike most Eagles, they do not always desert a plundered nest. I have twice taken single eggs out of nests, and ten or twelve days later, on re-examining the same nests, in consequence of observing the birds still hanging about the place, found that a couple more eggs had been laid since my last visit.

It does not do to dogmatize about the habits of birds. I have examined fully fifty nests of this species, some containing eggs and some young ones, and were I to trust to my own personal experience alone, I should certainly assert that the old birds *never* show the least fight in defence of their homes and progeny. Nevertheless, one of our most accurate observers certifies to their excessive pugnacity when they have young. Captain Hutton in the Journal of the Asiatic Society remarks:—

"I notice this species, because Captain Tickell states that it never makes the slightest attempt at defending its nest,—a striking contrast to the marvellous tales we read of, concerning the Golden Eagle in the Highlands of Scotland, &c. This remark is correct only, so long as there are eggs in the nest; for no sooner are these hatched, than the temper of the bird becomes wholly changed, and it will then defend its young with fierceness and determination. The nests I have repeatedly found and robbed, both on the banks of the Ganges and of the Sutledge, and in all cases where they contained only eggs, not the least show of resistance was made, the old birds either sailing off with a loud querulous cry, or sullenly remaining on an adjacent tree, watching the robbery that was going on. On one occasion, however, I met with a very different reception, when my servant was attacked with an unexpected ferocity, from which nothing but my gun could have saved him. The circumstance occurred in January 1832, when on my way up the country. The nest was placed near the summit of a tree, growing on one of the Colgong rocks, in the middle of the Ganges, and contained two half-fledged young ones. The old birds offered a most determined resistance, and without the aid of fire-arms we should decidedly have been defeated as they dashed fiercely and fearlessly at the man in the tree, who prayed hard to be allowed to descend, and was only kept at his post by the promise of reward and fear of the cudgel. At first we had to contend with the female only, but after one or two rapid swoops and dashes at the robber's head, which he avoided by bobbing under the nest, finding she could make no impression, she suddenly uttered a shrill cry, which was responded to in the distance, and in an instant after, her mate was seen swiftly gliding to her aid from the opposite bank of the river. The two then charged together towards the nest with the rage and fierceness of despair, and so terrified the man in the tree, hampered as he was with the young ones, that, had I not fired at and wounded the Eagles as they advanced, they would assuredly have hurled him into the river. In this manner, however, after repeated attempts to come to the rescue, we managed at last to drive off the old birds and secure the booty. At the end of five weeks the young ones exhibited as nearly as possible the plumage of the bird figured by Hardwicke and Gray as "*H. lineatus.*"

Recently Captain Hutton has sent the following further remarks in regard to this species :—" In the Dehra Doon this bird is extremely common, but it merely skirts the outer hills, about 5,500 feet, without entering them. I have seen six to eight together passing along the side of the hills below Mussoorie for some distance, and then returning again together in like manner; but what the object can be, I cannot make out. There is no fishing-ground along that route. They build in lofty trees on the banks of the larger Doon streams, laying one or two large white eggs. The nest I have described in the Journal of the Asiatic Society of Bengal."

The usual number of eggs laid by this species is three; but I have myself twice found four, and it is not at all uncommon to meet with only two eggs, fully incubated, or two young ones, in a nest.

Typically the eggs of this species are a rather broad oval, but a good deal of variation both in size and shape occurs. I have one or two very long and one very broad pyriform egg; but these are exceptions. The color is greyish white; and every specimen that I have yet seen (and some fifty have passed through my hands) has been absolutely unspotted. No doubt, as incubation proceeds, like most other Eagles' eggs, they become much soiled and stained with dingy yellow; but none have exhibited any trace of the markings shown in Dr. Bree's figures. As far as size goes, his figure pretty correctly represents an average specimen, but fully half are a good deal larger.

The eggs of this species can, I think, generally be separated from those of most of our other Indian Eagles, except those of *P. plumbeus* and *S. nipalensis*, by the intensely dark green of the shell when held against the light. If it is possible to separate any of our Eagle's eggs by the texture, I should say that, as a rule, there is generally a certain smoothness in the feel of these eggs which distinguishes them from those of other species; but this is by no means an invariable test.

The eggs vary from 2·55 to 3 inches in length, and from 2·02 to 2·27 in breadth; but the average of thirty eggs measured was 2·77 by 2·17 inches.

43.—*Cuncuma leucogaster, Gmel.*

Mr. H. C. Parker procured an egg of the White-bellied Sea-eagle on the 28th January 1861, from a nest in a lofty tree near the Roopnarin, in the neighbourhood of Diamond Harbour. Both birds were shot, the one from the nest. The egg, which was fresh, was nearly pure white, a very regular oval, slightly pointed towards one end, and measured 2·87 by 2·17 inches.

Dr. Jerdon states that "In Pigeon Island, 30 miles or so south of Honore, which is well-wooded with large forest trees, a whole colony of these birds have their nests, at least thirty or forty of them; and the ground below their nests is strewed and whitened with bones of sea snakes chiefly, and also of fish. They breed in December, January, and February."

My friend, Mr. H. R. P. Carter, has verified this observation through a correspondent, and, I believe, procured eggs thence; but I never received these.

Mr. Davison remarks: "I found the nest of this bird on the 8th of March on Nancowry (Nicobars). It was a huge mass of sticks placed between two great branches of a large tree, at a height of about 80 feet from the ground. The tree grew on the edge of a small land-slip, about 200 feet from the shore. It must have had eggs, as the bird was sitting; but I failed to obtain them. I could not climb the tree myself, and I could get no assistance from the Nicobarese."

45.—*Buteo ferox, Gmel.*

The Long-legged Buzzard is said to breed in the North-West, Punjab, and certainly breeds in the interior of the Himalayas west of the Ganges, as in Bussahir, Kooloo, and Kashmere.

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lays in the first and fourth weeks of March. Eggs, two to three; shape, *ovato pyriform*; size varies from 2·00 to 2·19 inches in length, and 1·66 inch in breadth; colour, greenish-white, or white blotched with red or claret-brown, vary greatly. Nest, large, in trees; sticks lined with cotton, rags, &c., and daubed with mud."

Of their breeding in the valley of Kashmere, he says: "Lays in the fourth week of April eggs, two in number, *ovato pyriform*, measuring from 2·10 to 2·40 inches in length, and from 1·77 to 1·80 inch in breadth. Nest and eggs as in plains."

I have been unable to verify the fact of this species breeding in the Salt Range. I have had men at work there for two years in the very locality noticed by Theobald, and yet they failed to see a single nest. Captain Cock, beyond question the best bird-nester in India, equally failed to obtain either eggs or nests in the Salt Range, and I think that the breeding of this species there must have been quite exceptional.

I have never seen or taken a nest myself, but have had them often described to me by others who have, as large, clumsy stick structures, placed usually high up in the fork of some large tree, and lined with hair, wool, and rags. They lay usually, I am informed, three eggs, but many lay only two, and four are sometimes found. The eggs that I have seen, said to belong to this species, appeared to me undistinguishable from large eggs of the common Kite.

One egg, said to belong to this species, which is no doubt a permanent resident there, was brought in (along with one of the parent birds) from Kooloo, where it was found in a large loose nest in a tree on the 10th January. Two other precisely similar eggs, found in a similar situation on the 1st of March, were obtained (again with one of the old birds) in Bussahir. They ought to be genuine, but I cannot separate them from large boldly-blotched Kites' eggs. They are broad, regular ovals, quite devoid of gloss; strong compact shells, dark green when held up against the light. The ground colour is dull, slightly greenish or bluish white. Two of the eggs are very boldly and densely blotched; the one about the larger, the other about the lesser end, with deep brownish red, which in places is almost black; the rest of the egg exhibits only a very few small spots. The third egg has a few of the deeply-coloured blotches and spots at the small end, and a number of paler reddish brown spots, specks, and blotches, scattered chiefly about the large end. One of the eggs is of exactly the size and precisely resembles Mr. Hewitson's 2nd figure of the egg of *B. vulgaris*.

The three eggs vary in length from 2·25 to 2·32 inches and from 1·78 to 1·8 inch.

48.—*Poliornis teesa, Franklin.*

The White-eyed Buzzard lays usually in Upper India during April. A few nests may be found during the latter half of March and the early part of May; but these are exceptions.

They prepare their nests as a rule, some considerable time before they lay: a nest examined, and ultimately taken, in Etawah, was completed twenty-four days before the first egg was laid.

They make their own nests, (a new one, as far as my experience goes,) each season, never I believe appropriating those of other species; but they will, at times, pull these to pieces for materials. The nest is usually placed in a fork pretty high up in some thickish foliaged tree—Mangos, in some localities at any rate, being decidedly their favourites. I *have* found a nest in a solitary tree; but more commonly they choose one of the outer trees of some small clump or grove.

The nest is a loose structure of twigs and sticks, very much like a Crow's, and without any lining. Normally they lay three eggs; but I have once found four, and on several occasions have taken nests containing only two, both fully incubated.

These birds are much attached to their nests, and hang about them for many days after they have been robbed, and at times will lay in them a second time. On the 11th April 1867, I took a single perfectly fresh egg out of a nest, which a few days before had been cleared by Mr. Brooks.

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range :—

"Lays in the second week of April. Eggs, four only; shape varies from ovate pyriform to blunt ovato-pyriform; size, from 1·80 to 1·93 inch in length, and 1·50 inch in breadth; color, pure greyish or plumbeous white. Nest, small, of twigs, in trees near cultivation."

Captain G. Marshall, R. E., writes from Saharunpoor: "This bird breeds in May, making a small rudely-constructed nest of twigs and sticks in the fork of a tree about 25 feet from the ground, and without lining of any sort; the eggs are hatched in the beginning of June; they are generally three in number, but I have never seen more than two young ones in a nest.

"In one nest I found a half-fledged young one, another dead with its stomach eaten away, and two live lizards, one of them partially eaten. On March 27th, I noticed one of these birds commencing its nest, and another on the 7th April; the latter nest I took on the 10th May, and it then had three hard-set eggs." On another occasion, he says: "This species is very common in these parts; it builds in the forks of trees, generally Sheeshum or Khirna, a very rude and small nest of twigs. I have noticed this bird pulling to pieces the nest of a Pied Starling, but I imagine it was only to get the materials, as the nest was empty at the time."

Writing from Sambhur, Mr. R. M. Adam says :—

"The White-eyed Buzzard is pretty common here. I took a nest with two eggs on the 29th April 1870; but they must lay much earlier than this, as I saw a pair making love on the top of one of the salt heaps on the 26th September 1870. In Oudh I obtained a nest on the 30th April, which contained three fresh eggs."

The affinities of this bird, to judge by its eggs *only*, are rather with the Goshawk and the Harriers, than with the Buzzards or the Kites. The eggs are pure greyish or pale bluish-white, absolutely without speck or spot; at least not one, of nearly forty specimens that I have possessed, has exhibited any traces of markings. In shape they are a broad oval; but some are slightly pyriform. Mr. Hewitson's figure of the Marsh Harrier's egg might do for the largest specimens; while his figure of the egg of Montague's Harrier exactly represents a peculiarly small specimen that I took in Etawah. Held up against the light, the shell is a sea-green, much of the same hue as that of the eggs of *A. vindhiana.*

The eggs vary from 1·75 to 2·0 inch in length, and from 1·4 to 1·62 in breadth; but the average of thirty-six eggs measured was 1·83 by 1·53 inch.

48 *ter.—Poliornis liventer, Tem.*

The only locality within our limits where I certainly know that the Livid Buzzard occurs, is in the neighbourhood of Thayetmyo, on the northern frontier of British Burmah. "Here," writes Captain Feilden, "I only found it in a long line of paddy fields, extending many miles inland from Thayetmyo, but much broken by patches of jungle and dotted with large trees standing singly or two or three together in the middle of fields. It breeds in March."

The only nest he took was built on a thin branch of a single high tree surrounded by dry rice-fields. The eggs are very like those of *Poliornis teesa*; a pale skim-milk blue, and comparatively glossless, but with a very few tiny, pale brown, and purplish brown specks. One egg measured 1·85 inch in length by 1·3 in breadth; so that, to judge from this specimen, the eggs of this species are somewhat narrower than those of *P. teesa.*

54.—*Circus æruginosus,* *Lin.*

Two eggs, said to belong to the Marsh Harrier, were brought me from Southern India by Mr. Davison; they were given him by Mr. Rhodes Morgan of the Forest Department, who vouched for their authenticity. They were a rather broad, very regular oval, quite devoid of any gloss. The ground color is white, and both have a good number of markings; in the one minute specks and spots chiefly at one end, the other with numerous pretty large blotches and irregular smears; in both cases very pale brown. This second egg is very much more profusely marked than any European specimen I have yet seen, and the ground color lacks the faint greenish or bluish green tint that one is accustomed to. They are said to have been found in the Kurnool District on the banks of the Kistna. They measure 1·82 by 1·49 inch, and 1·89 by 1·58 inch.

It seems probable that this species breeds in the plains of India in suitable localities. In the jheel-studded tract of country lying partly in the Mynpooree and partly in the Etawah District, I, many years ago, shot a large adult and saw several others quite at the close of May. An unusually heavy rainfall had filled all the lakes, or, as we should call them in Norfolk, *broads,* to overflowing, and the unsettled state of the country had, in a great measure, prevented the customary agricultural drain on them, and many of them, commonly dry at this season, were still extensive sheets of water. I can scarcely doubt that these birds bred there that year.

In Oudh, native fowlers informed me that they bred in swampy grounds, Trans-Gogra. Mr. F. R. Blewitt, writing from Jhansie, in the neighbourhood of which there are several considerable lakes, says that he has procured the Marsh Harrier there throughout the hot weather and rains.

55.—*Haliastur indus, Bodd.*

The Brahminy Kite lays from January to the early part of April, according to season and locality. Like many other species, it breeds earlier in Lower Bengal than up-country. In Upper India, where it is comparatively rare, it almost invariably makes its nest in the neighbourhood of water, building a rather large, loose, stick structure, scarcely, if at all, distinguishable from those of the common Kite (*M. govinda*), high up on some large Mango, Tamarind, or

Peepul tree. The nest, which is from 18 inches to 2 feet in diameter, and from 3 to 5 inches in depth, with a rather considerable depression internally, is sometimes perfectly unlined, at other times has a few green leaves laid under the eggs, as in an eagle's nest, but most commonly is more or less lined, or has the materials of the inner part of the nest intermingled, with pieces of rag, wool, human hair, and the like.

Most commonly only two eggs are laid, but three are by no means uncommon, and one of my correspondents notes finding four in one nest, a very unusual number.

Mr. F. R. Blewitt says: "This Kite was found breeding in the Sumbulpore District in the latter part of January; in the Raepore District in February, March, and April. The tallest tree of a group, in the neighbourhood of a large tank or sometimes near to a stream, is almost invariably selected for its nest. This nest, most frequently made on one of the upper higher branches, is loosely constructed of coarse twigs, having the depression in it often lined with grass, leaves, or odd pieces of rags. Three is the maximum number of eggs."

Captain G. Marshall, R. E., says of this species:—"Breeds in the Saharunpoor District. I saw a female on her nest in a huge dry tree in the early part of March, but as the tree was inaccessible, I was obliged to leave it; the nest was of sticks about 50 feet from the ground."

Mr. R. Thompson remarks:—

"At Shahgunj, Pergunnah Bhurrur, District Mirzapore, I saw on the 6th March 1869 a pair of these birds building their nest, which was placed in a Mango-tope, on a tall tree. There were no eggs, as the birds had not then laid, but the nest was as complete as it could be.

"The nest was like that of *M. govinda* and placed on a very high branch."

Dr. Jerdon tells us that "the Brahminy Kite breeds on trees in February and March, making a not very large nest of sticks, sometimes lined with mud, and laying generally only two eggs, which are sometimes dirty white, at other times white, with a few rusty brown spots. In the Carnatic it usually selects a palm tree to build in. Layard says that it makes several false nests, and that whilst the female is incubating, the male generally occupies one of the nests first made."

The eggs vary in shape of course, but typically are very perfect, moderately broad, ovals, only slightly compressed towards one end; as a rule, they are smaller, and as far as my experience goes, far less richly coloured than those of *M. govinda*. The ground colour is greyish-white, sometimes unspotted, but dingy, sometimes feebly speckled and spotted, at times towards one end only, with pale dingy brown, and sometimes scantily blotched and spotted with reddish-brown. In size, the eggs vary from 1·85 to 2·2 inches in length, and from 1·5 to 1·79 inch in breadth; but the average of eighteen eggs measured was 2·02 by 1·65 inch.

56.—*Milvus govinda*, *Sykes*.

The Pariah Kite lays at very different seasons in different localities. In the plains of Upper India and the Punjab, the great majority lay in February, a few only breeding in the previous and succeeding months. Lower down country, they are, I believe, earlier, and I myself have taken eggs as early as Christmas Day. In the districts bordering on the bases of the Himalayas, March is the more general time; while in the Himalayas, where our bird is common up to a height of 6,000 or 7,000 feet, they mostly lay in April and May. Everywhere stragglers breed earlier and later, by nearly six weeks, than the great body of the birds do; so that, even in the neighbourhood of Agra, we have eggs recorded as early as the 29th December, and as late as the 13th April. In Bareilly, I took a nest of fresh eggs on the 9th May, and at Simla found three much incubated ones as late as the first week in June. They build almost without exception on trees; but I have found two nests (out of many hundreds that I have examined) placed, Neophron-like, on the cornices of ruins.

The nest, mostly placed in a fork, but not uncommonly laid on a flat bough, is a large clumsy mass of sticks and twigs, the various thorny accacias appearing to be the favorite material, lined or intermingled with rags, leaves, tow, &c. The birds are perfectly fearless, breeding as freely on single stunted trees, situated in the densest populated bazars, or most crowded grain-markets, as on the noblest tree in the open fields. The great majority breed in the suburbs of the towns and villages, the offal of which supplies their daily food; but single nests may be found far away from human habitations in almost virgin jungle.

Two appears to be the normal number of the eggs, but they often lay three. Twice I have obtained four, and on several occasions I have met with a single hard-set egg, or young one, in a nest.

When robbed of their eggs, the old birds, as *a rule*, mope about the place without laying more eggs, or attempting to build a fresh nest; but I have known several instances in which more eggs were laid in the same nest, and one in which an entirely new nest was constructed by the old birds in an adjoining tree, in which a single egg was laid and hatched.

Captain G. F. L. Marshall, writing from Saharunpoor, remarks that this species "generally breeds in February and March; but I have taken eggs as late as the end of April. It usually lays three eggs, but will lay more if some of the eggs are taken. I took two out of three eggs from one nest, leaving one to prevent the bird forsaking the place. A short time after, I sent a shikaree to shoot and bring me the bird; he mistook my orders and brought the eggs; there were three then, two more had been laid; after this one other egg was laid, and then the nest was forsaken; the nest was in my own compound, so that I had ample opportunities for watching it."

Mr. R. M. Adam says: "This bird breeds at Sambhur during March and April. I have generally found the nest on large Peepul trees. The nests which I have taken contained sometimes two, sometimes three eggs."

Mr. W. E. Brooks remarks, that this species is "tolerably common both at Nynee Tal and Almorah, at both of which places it breeds about two months later than it does in the plains."

Mr. Davison tells me that "the common Kite breeds on the Nilghiris, but not very abundantly, during the months of December, January, and February, and I have taken the nest at Madras in the latter end of December; on the Nilghiris the nest is usually placed high up in some solitary tree. This Kite is very common on the Nilghiris, ascending quite to their summits; they usually roost in company at night in some large tree often in company with *Haliastur indus*."

As regards the eggs themselves, the countless varieties of types of colouration which they exhibit defy description. I have before me now specimen absolutely devoid of any trace of colour which might well stand for gigantic specimens of *Poliornis teesa,* but these of course are very exceptional; I have only two such in a series of several hundreds. The ground colour is almost invariably a pale greenish or greyish-white, more or less blotched, clouded, mottled, streaked, pen-lined, spotted or speckled with various shades of brown and red from a pale buffy brown to purple, and from blood-red to earth brown. Many of the eggs are excessively handsome, having the boldest hieroglyphics, blotched in blood-red, on a clear white or pale green ground. Others again are covered with delicate markings, as if etched on them with a crow-quill, but no doubt the markings in the majority are more or less smudgy, and but dingily coloured. In some few, the ground colour is a dull mottled purple, clouded over with deeper shades of purplish brown. Compared with many other species, the eggs do not vary so very much in size or shape; they are normally a very perfect oval, scarcely more compressed at one end than at the other, but elongated, pointed, spherical and pyriform varieties occur. The colour of the shells, when held up to the light, varies a good deal; in some it is as light a green as *Circaetus gallicus,* in others, as deep as in *Haliaetus Macei.* I may here note that Dr. Bree's figure of the egg of the Arabian Kite correctly enough represents one common variety of the eggs of *Milvus govinda.*

Although, as a rule, the eggs are glossless, a good many, when freshly laid, bear more or less of a natural glaze, which vastly brightens their colouring.

In size, the eggs vary from 1·9 to 2·35 inches in length, and from 1·55 to 1·85 inch in breadth, but the average of 273 eggs measured was 2·19 by 1·77 inch.

56 *bis.—Milvus major, Hume.*

I entertain little doubt of the distinctness of this, the Greater Indian Kite, and *M. melanotis,* Tem. and Schl. (*vide,* Stray Feathers, 1873, *pp.* 160 *et seq.*).

The Greater Indian Kite lays in the Himalayas from January to the beginning of May.

They build large stick nests, similar in every respect, apparently to those of the Pariah Kite and placed like theirs on trees. I have obtained the eggs from Kooloo, Busahir, Koomarsain, and other portions of the hills, north, north-east, and north-west of Simla. Mr. Brooks obtained the eggs in Kashmere in May.

The eggs appear to differ in no very perceptible degree from those of the common Kite except in size. Even this difference is not very marked in all specimens. Out of 273 common Kites' eggs, the average dimensions are 2·19 by 1·77, the longest egg measured 2·35, and the broadest 1·85. About one in ten of these eggs exceeded 2·29 in length. Of the 13 eggs of *Milvus major* now before me, only one falls short of 2·3 in length or 1·8 in width, and the largest egg measures 2·43 by 1·85. Taken as a *body* they are conspicuously larger than those of the ordinary *Milvus govinda.* As before remarked, in general appearance and colour they resemble the eggs of this latter, but some of them are perhaps more richly marked than any that I have met with amongst these.

They vary in length from 2·23 to 2·43 inches, and in breadth from 1·75 to 1·88 inch, but the average of thirteen eggs is 2·31 by 1·8 inch.

57.—*Pernis ptilorhynchus, Tem.*

Mr. Gurney tells me that he thinks the above specific name has priority. It is not improbable that the Bengal race may have to be separated from the Upper and Southern India one. In the former the crest would appear to be always well developed, and, according to Blyth, the iris red, whereas while in the latter the crest is at best rudimentary, the iris is bright yellow. This refers to adults; in the young the iris is brownish-red in the former, brownish yellow in the latter.

Our Upper Indian Honey-buzzard breeds throughout the plains in well wooded and watered districts, but except in the Sub-Himalayan tracts, such as the northern portions of Bijnour, Bareilly, Saharunpoor, the Doon, &c., its nests are few and far between.

It lays in May and June, and in the latter and former halves, respectively, of April and July. It builds in trees, placing its moderately sized stick-and-twig nest in a fork, usually some considerable height from the ground. In texture the nests differ much, some are compactly and neatly, others loosely and carelessly, put together, but all are more or less thickly lined with leaves or occasionally grass. As a rule, they lay *two* eggs, but it is not uncommon to find a single, fully incubated, egg.

I owe to Captain G. F. L. Marshall, R. E., the following interesting note on the nidification of this species in the Saharunpoor District, which renders further remarks of my own on the subject unnecessary:—"The Crested Honey-buzzard builds in May, the young being usually hatched in the beginning of June. The season for building is, however, spread over a long period, as in one case I noticed a bird building on the 23rd *March*; the nest was completed by the end of *April*, but the first egg was not laid till the 12th May, and the second egg on the 14th; I took the nest on the 15th.

"The nest is situated in the stout fork of a tree, generally about two-thirds of the way up; of the ten nests I have taken, one was in a Toon tree (*Cedrela toona*) and all the rest in Sheeshum trees (*Dalbergia sissoo*). The nest is cup-shaped in the first instance, but so filled up with the lining as to appear more like a flat platform. It is a compact structure, composed entirely of twigs, neatly put together and lined with a thick layer of dead leaves, chiefly Sheeshum leaves, almost filling up the hollow space; in one instance I found the nest lined with perfectly fresh green leaves, and as there were two eggs in it, the lining must have been partially renewed after the eggs were laid. The outer diameter of the nest is about 16 to 18 inches, and of the egg receptacle about 10 inches; the depth of the structure, including lining, is about 9 inches.

"The eggs, *two* in number, are deposited in the middle of the platform; the colour varies greatly, from a white ground, more or less blotched with every shade of reddish-brown to a reddish-brown ground, clouded and blotched with a darker shade. Some are exactly like gigantic Falcon's eggs, while others again closely resemble richly blotched Kite's eggs: in shape they are mostly very round. The shell is thin, and rather brittle, and smoother than is usual among the Raptores.

"The bird is rather familiar in its habits, and by no means shy; I took three of its nests, from compounds in the station of Saharunpoor, and three more from the compounds of the canal chokies. It seldom flies far, and is easily approached. When the eggs are near the hatching point, the bird sits excessively close; I have found it impossible to drive it off by throwing stones, and on one occasion the female only flew when my hand was actually on the nest, though she had been struck pretty sharply by several of the stones. The male bird assists in building and is more wary than the female.

"On one occasion I noticed a male bird with a stick in its claws fly into a tree and return without it. I went up to the place, and noticed the commencement of the nest; while I was standing there the male bird returned with another twig, but catching sight of me from the distance, he turned off and went into another tree some distance off, and nothing would induce him to come near the place till I was well away, though the female kept going and coming all the time."

Mr. W. Blewitt says: "We found one nest of this species near Hansie on the 16th June, which contained a single fresh egg. The nest was placed on a Neem tree, at the height of about 16 feet from the ground, and was slightly built of Keekur and Zizyphus twigs and scantily lined with reed grass. It measured 10 inches in diameter and 4 in depth."

In another letter, also from Hansie, he remarks: "We got two nests of the Honey-buzzard on the 5th and 10th July out of Sheeshum trees on the canal banks. One contained a single, fresh, the other a solitary, fully incubated egg. The nests were respectively about 15 and 20 feet from the ground, were constructed of Keekur and Sheeshum twigs, and were lined with leaves."

Mr. R. Thompson, writing from Gurhwal, remarks that "the Honey-buzzard breeds from April to June, building its circular, pan-shaped nest (which no little resembles that of *Spizaetus caligatus*) in large trees, in open forest country."

Normally, the shape of the eggs of this species is nearly spherical, and even the most aberrant are a very broad oval. Typically, they are very highly coloured eggs, and remind one much of the eggs of the European Honey-buzzard. I have a specimen which corresponds closely with the second figure in Hewitson's Pl. XV, and I have others fully as richly coloured, but of a different type. The ground colour varies from white or pinkish-white to buffy-yellow, and the markings from reddish-brown to intense blood-red. In one, the markings are a rather dingy, though deep, purple. In another, the whole egg is buff brown, faintly but thickly mottled and clouded with yellowish brown. Another egg, with a reddish brown ground, is entirely capped, and thickly mottled, over the whole of the rest of the surface, with a very dull but deep cinnamon red, reminding one forcibly of some of the richest coloured Neophrons. As a rule, these eggs are glossless, but one or two have a trace of gloss about them. The lining, or rather the colour of the egg-shell, when held up against the light, varies from greenish white to dingy yellowish green.

In size, the eggs vary from 1·82 to 2·22 inches in length, and from 1·55 to 1·85 inch in breadth, but the average of ten eggs measured was 2·03 by 1·72 inch.

59.—*Elanus melanopterus*, *Daud.*

Mr. Gray separates our Indian Black-winged Kite as *E. minor,* Bonap. I confess that I am as yet unable to adopt this view.

Not much is known of the nidification of this species within our limits. In the Central Provinces it lays during the latter half of November, December, and January, in the Doon and in Lower Gurhwal from April to June, and in Rajpootana in August. Possibly these birds breed twice in the year, but this is not likely, and the difference in season in the several localities is probably due to the great differences in the climate and rainfall of the latter.

Mr. Blewitt writes: "This Kite evidently breeds from, I should say, the middle of November to January. I first secured its eggs in the Sumbulpoor District on the 20th December, while I obtained a pair of quite young half-fledged birds on the 21th January. The nests, including a newly-made one found empty, were placed on the forks of the upper branches of low forest trees about 18 to 20 feet from the ground. In form they were circular and composed of small sticks and twigs somewhat compactly put together, with the egg cavity about an inch deep, neatly lined with fine grass. There is no doubt that this Kite breeds in all those tracts in the Sumbulpoor District that are sparsely wooded and extensively cultivated with rice; and probably as it is somewhat common there, this may also be the case in the Raepoor District. I take three to be the normal number of the eggs. The young birds had become very tame, when, unfortunately, one day the crows carried off the male bird and so injured it that it died a day or two after. The female on losing her mate pined away and died a week after. I had them about seven weeks. In these young Kites, when I got them, the iris was a dark brown, but when I lost them, light hazel. From this fact, and other inspections of numerous specimens from the immature to the adult stage, I am certainly of opinion that the iris is first of all dark brown, which gradually with age changes to the light hazel, then yellow, and lastly, to the carbuncle red of the full adult. I have never noticed the alleged crepuscular habits of this bird."

Mr. Adam says: "At the village of Kuchrodda, about 6 miles south of the town of Sambhur, there is a large jheel with a tope of Khajur Palms (*Phœnix sylvestris*) on one side, and straggling trees of this species all round.

"On the 19th July 1872, near one of the solitary Khajur trees, I observed an *Elanus melanopterus*, and as this bird is rather rare about the Sambhur Lake, I went in its direction, intending to kill it; but just as it rose from the ground, I saw it was carrying a twig in its bill, and this it carried to the top of the Khajur, where I found it had a nest nearly finished. Both birds were employed taking twigs to the nest.

"On the 7th August I sent a man to see if the nest contained eggs, but he found it had been abandoned, and a new nest commenced on one of a group of six Lasora trees (*Cordia myxa*) which stood near to the Khajur. He also informed me he had seen the birds together.

"I inspected the nest on the 10th August, and found one of the birds sitting on it. The nest was so loosely constructed that with my binoculars I could see that it contained no eggs.

"I again inspected the nest on the 14th August, and found that it contained two eggs. One of the birds sat close on the nest, and would not be frightened off by a man beating on the trunk of the tree with a stick, and this same bird made a swoop at my servant as he was climbing the tree.

"The nest was situated on the very top of the Lasora tree, and was from 25 to 30 feet from the ground. In shape it was circular, and with the exception of two or three pieces of Sarpat grass (*Saccharum sara*) there was no attempt at lining. It was about 10 inches in diameter, and the egg cavity had a depression of about 2 inches. The twigs of which the nest was composed were of an uniform size throughout, and I could distinguish twigs from the following plants which were growing close by, *viz.*, Jarberri, (*Zizyphus nummularia*) Bunna, (*Edwardsia mollis*); Khep, (*Crotalaria burhia*); Jhoghru, (*Tephrosia purpurea*). All these twigs were very loosely and openly laced together.

"The eggs are without gloss; both have a light creamy white ground, of which, however, little is shown. One had the broader end all blotched over with confluent patches of deep rusty red, while the smaller had numerous spots and freckles of a much lighter brownish-red. The other egg is of a darker and purer blood-red, and the mass of confluent colour is at the smaller end, while the larger is very thickly blotched, streaked, and clouded with darker and lighter shades of brownish-red."

Mr. R. Thompson (*vide* page 339, Rough Notes) informed me that in Lower Gurhwal and the Dehra Doon, "they breed from April to June, choosing low trees, usually one standing by itself, in (for those localities) sparsely wooded spots to build on. The nest is circular, not unlike that of *Corvus culminatus*, composed of small sticks and twigs and lined with fine grass roots and fibres. This species is sparingly found along the foot of the Himalayas. It does not enter valleys unless, as in the case of the Patlee and Dehra Doons, they happen to be pretty open." Writing later from the Central Provinces, he says: "In the Central Provinces, the breeding season is from December to January; the nest is placed upon small trees from 15 to 20 feet from the ground. It is circular like a crow's nest, of about the same size and composed of the same materials. I have now found two unfinished nests of this bird. The first was in the Saugor District, on the banks of a small nullah, in a pretty open bit of country yet sufficiently wooded to keep the place moist and damp. This nest was found on the 17th November 1869. The second one, found in the Seoni Plateau on the 6th January 1871, was placed on a small *Boswellia thurifera* tree, on the edge of a deep ravine. The male bird was observed rising from the ground carrying a twig in his bill and going directly into the tree. This fact led to the finding of the nest which was nearly complete. In the valleys of the Meikle Range, in the winter of 1869-70, I frequently met with this Kite and broods of young ones, and even saw their nests, but have not been fortunate enough to find the eggs."

The eggs which I owe to Mr. Blewitt are unlike those of any other species of Kite with which I am acquainted. In shape and general appearance, they are more like miniature *Neophron's* eggs than those of any other bird with which I am acquainted. In shape they are short broad ovals. The texture of the shell is somewhat chalky. The ground colour, so far as anything can be seen of it, is dull white, but the whole egg is mottled, smeared, and clouded with a dull brownish red, which in some eggs is most intense at one end where no portions of the ground colour are left visible, while in other eggs the same is the case with the other end; while in a third type both ends, and in fact the whole surface are pretty uniformly mottled all over, leaving scarcely any portion of the ground colour visible. When held up against the light, the shell is a pale sea-green; it has little or no gloss. These eggs do not correspond at all with Mr. Bree's figures. They are much smaller and much more highly coloured. There is no mistake, however, about the authenticity of *these* eggs, I feel sure, for Mr. Adam's eggs are of precisely the same type, although one of them shows a good deal of the ground colour (only slightly freckled and mottled with brownish-red) at the small end.

All the eggs are nearly the same size; they vary from 1·42 to 1·52 inch in length, and from 1·16 to 1·25 inch in breadth; but the average is 1·48 by 1·2 inch.

60.—*Strix javanica*, *Gmel.*

Mr. Blyth remarks, Ibis 1870.

"*Strix indica* nobis (Ibis 1866, p. 250). Numerous specimens from Java in the Leyden Museum, and others from Australia, referred to *S. delicatula*, Gould, in the British Museum, differ in no respect from the common species of India and Burma, which I suppose must be re-instated as *S. javanica;* while the *S. javanica* of Horsfield (which is figured by Messrs. Gray and Mitchell) is considered by Mr. Gurney, as by Dr. Kaup, to be identical with *S. delicatula* (*vera*). No two species of the genus *Strix* are more distinct than these are, whether from each other or from the European and North African *S. flammea.*" This will explain my re-adoption of Gmelin's name for our present species.

The Javan Screech Owl, the representative in India of the European Barn Owl, lays (apparently) in Upper India from the middle of February to the middle of June; Mr. R. M. Adam obtained the eggs on the 10th June near Agra; Mr. Brooks obtained them near Etawah on the 17th of February; and I have obtained them on three occasions in March in Allygurh, near Jeypoor, and near Lucknow. In the Central Provinces they lay from November to January.

As far as my personal experience goes, they breed either in holes of old buildings or in wells, the latter being the favourite locality, but at Ajmere, some native fowlers showed me a pair in a small and easily accessible cave, in which they asserted that these birds had bred for years, and Mr. F. R. Blewitt found their nests in holes of trees.

In some instances the eggs appear to be laid on the bare ground with but a few grass stems or feathers about them, in others there is a small stick nest, much like that of a pigeon's.

According to my own experience they lay three eggs, but according to native trappers, *sometimes* as many as six, and *usually* four, while on two occasions Mr. Blewitt found that they had laid seven.

He remarks: "It was on the 7th December 1870, in the forest near Toomgaon, Raepore District, that my men brought me seven half-grown young of this species. They were secured in a large hole about 12 feet from the ground in the trunk of a large Mowah (*Bassia latifolia*) tree; an adult Painted Partridge (*Francolinus pictus*) had formed part of their night's repast. Again, on the 9th of the same month, in the Sumbulpore District in the Singhora beat, in a clump of half a dozen Mowah trees, I found in the hollow of a large lateral branch of one (some 9 feet from the ground) six eggs and a young bird just hatched. The eggs were simply deposited on the wood. Seven would therefore appear to be the normal number of the eggs.

"In neither case was there any *nest* of any kind. The bird is common in these parts (Raepore, Sumbulpore) and breeds always in holes of trees, simply I suppose because it can find no old pukha wells or buildings to breed in. The young birds I reared, and I mention a noteworthy fact. The birds were fond of standing in the water given them in a broad open vessel and bathing themselves. It was amusing, too, to notice their dexterity in grasping with their claws the pieces of meat thrown into the water, which they would devour piece by piece, holding them in one claw like a parrot. When young, the birds were very tame, but as they grew up they became rather wild. They were voracious eaters, and at times it was difficult to procure sufficiency of food to satisfy their insatiable appetites. It is singular fact that when it was given them, they would invariably at once disgorge the flesh of Owls, Kites or Hawks. However disguised the result was the same; small birds, their favourite food, were swallowed whole."

The eggs, like those of all owls, are unspotted white, but most of the specimens that I have seen had, like many of our larger owls' eggs, a very faint creamy tinge. In shape, the eggs appear to be more oval and less round than those of the European *Strix flammea* to which they closely approximate. Of all our Indian Owls too, so far as my experience goes, this species lays the least spherical egg. The texture is compact and fine, but there is less gloss than in most species of this family.

The eggs vary from 1·55 to 1·79 inch in length, and from 1·2 to 1·35 inch in breadth, but the average of thirteen eggs measured was 1·69 by 1·28 inch.

61.—*Glaux candida, Tickell.*

Mr. C. H. Parker of the P. and O. Co.'s service, to whom I owe the only egg of the Grass Owl contained in my Museum, has favoured me with the following note:—

"When I was a planter in Tirhoot, I found whilst out partridge shooting near Shapur, on the 26th of October 1866, a nest of the Grass Owl in long grass; both the old birds rose from the nest, and one was shot as a specimen. There were five eggs much incubated and two young ones just hatched in the nest. The following day another nest was found in a similar locality containing five eggs; these were fresh, and measured about 1·5 inch long by 1·25 inch broad. The eggs from the first nest appeared broader than those from the last, but I did not measure them."

Colonel Tickell, in his paper on the nidification of certain species in the plains of India, remarks in regard to the present bird:—

"Little or no nest, at most a little grass scattered and smoothed down in the midst of heavy grass jungle; always on the ground. Eggs usually four in number, round, pure white; size 1·75 by 1·37 inch, November or December.

The eggs of this species with which I have been favoured by Mr. Parker are pure white, with very little gloss, and of more elongated oval than those of either *S. flammea* or *O. vulgaris* or *brachyotus*. They are somewhat smaller, too, than the average of either of these species. The two eggs sent by Mr. Parker measured 1·65 by 1·27 inch and 1·66 by 1·28 inch.

64.—*Bulaca newarensis, Hodgs.*

The Brown Wood-owl of the Himalayas, so far as I yet know, lays in May. I have only seen one nest, which was in a deep, wooded, precipitous little valley or khud, at the back of Mahasoo (near Simla). Contrary to what might have been expected, it was placed on a shelf projecting from the face of a low precipice; immediately above it projected a large point of rock, from which depended a perfect curtain of bushes, which reached the tops of the trees, growing at the foot of the precipice. The nest, the Paharees said, (I could not get up to it myself,) was composed of sticks, with a few feathers intermingled; it was completely hidden from sight by the bushes and rocks above and below, and contained, on the 6th of June, three very young birds.

The female was fired at, but not obtained at the time; weeks afterwards, her remains were found, hanging in the moss and ferns of a tree, some distance down the valley, utterly rotten and spoiled.

The male brought the young ones up, and, on the 10th of October, I shot him and one of the young ones, then as nearly full grown as might be.

65.—*Bulaca ocellata, Lesson.*

The Motled Wood-owl lays in the plains of the North-Western Provinces and the Punjab, in February and March, but I have a note of the eggs having been taken in the Doon early in April. In the Central Provinces it lays from November to January.

Its eggs are deposited at heights of from 8 to 25 feet from the ground, in some large cavity, or in the depression at the fork of two or more huge branches, of some old Peepul or Mango tree. There is no nest, so to speak, but a little dry touch-wood, a few dead leaves, or a little earth covering the floor, if I may so call it, of the nesting place, forms a scanty bed for the eggs.

I have more than once shot the male sitting on the eggs. Mr. W. Blewitt writes: "I found a nest near Hansie in a hollow of a Peepul tree about 19 feet from the ground, on the 16th of March. The nest hole which was lined with leaves, contained two partially incubated eggs."

Mr. Brooks says that on the 3rd of March 1867, he "took a pair of eggs out of a nest in a Mango tree. The nest was in the fork of two huge branches about 20 feet from the ground. There was a little earth and a few dry Mango leaves. The eggs were pure white and very round."

Writing from Raepore (Central Provinces), Mr. F. R. Blewitt remarks;—"This owl certainly breeds from November to January. On the 5th December 1870, I secured for the first and last time the eggs of this species in the Toomgaon (Raepore Districts) open forest. At a height of some 12 feet from the ground, the trunk of a Kaim tree (*Nauclea parviflora*) had divided into two branches, and in the open cavity between these two, which was nearly 2 feet deep, were deposited three fresh eggs, on some loose dry touch-wood and earth. I have occasionally met with this owl, but only in the Raepore and not in the Sumbulpore District. Mango topes are its favourite haunts, though an occasional pair may be met with in open forest."

Two is the ordinary number of eggs laid; indeed there were two eggs (in three instances more or less incubated) in every one of the seven nests of which I have notes.

The eggs of this species are generally a very round oval, white, with, in many instances, a very delicate creamy tinge. In size and shape they seem to be scarcely distinguishable from those of the allied *S. aluco* of Europe. In texture they are coarser than those of *Strix javanica* or any of the *Ephialtes* or *Athene's*, that I know; but they are finer than those of *Ketupa ceylonensis* or *Urrua coromanda*. From the eggs of *Ascalaphia bengalensis*, it is scarcely possible to separate them; although *bengalensis* is a considerably larger bird, its eggs, as regards size, shape, and texture, seem almost identical with those of the present species. All that I can say, with an ample series of both before me, is, that, as a body, the eggs of *bengalensis* are a mere trifle larger, and have more gloss than those of *ocellata*. For the size of the bird, the eggs of the present species are somewhat large.

In length, they vary from 1·86 to 2·1 inches, and in breadth, from 1·6 to 1·75 inch, but the average of thirteen eggs measured was 1·99 by 1·67 inch.

69.—*Ascalaphia bengalensis, Frankl.*

The Rock Horned Owl breeds, as a rule, in February, March and April, but eggs are occasionally met with both in December and January, and in the lower valleys of Gurhwal, according to Mr. R. Thompson, may be met with as late as the end of May.

The birds make no nest, but merely scoop a small hollow in the earth, in which to deposit the eggs. Occasionally, they will lay on the level ground under some over-hanging bush or tuft of grass, but almost without exception, they choose some little cave or recess in, or projecting ledge or shelf of, some rocky or earthy cliff in the neighbourhood of water. The precipitous banks of canals and rivers are perhaps their favourite brooding-places, and as my friend, Captain G. F. L. Marshall, first pointed out to me, they (in northern India) almost invariably select a cliff face looking westward.

The normal number of the eggs is perhaps four; but I have often found three and, more than once, only two eggs much incubated.

This species is very common in the Saharunpore District, especially towards the north, and from thence Mr. G. Marshall sent me the following account of its nidification:—"The Rock Horned Owl breeds from December to April, the middle of March being the best time for searching for its eggs. On one occasion only, I found the eggs on the level ground, on a plain, at the foot of a tuft of grass; on every other occasion, I have found them on a ledge, in the perpendicular bank of a ravine, generally by the canal, and, without exception, on the left bank facing the west. It lays four, very round, pure white eggs, slightly hollowing the ground to receive them, but making no attempt at a nest or even a lining to the hole. I have always found the nest close to water.

"I found	two fresh eggs	on	16th December.
,,	two fresh eggs	,,	21st March.
,,	four half-fledged young	,,	26th ,,
,,	two fresh eggs	,,	28th ,,
,,	two young birds	,,	3rd April.
,,	four set eggs	,,	3rd ,,
,,	four fresh eggs	,,	16th ,,

"The birds keep close to water as a rule, and the male bird seldom wanders far when the female is sitting; they seldom perch on trees, and, during the breeding season, the male bird may be seen sitting on the top of the bank, somewhere near the nest, at all hours of the day. They are rather shy birds, and leave the nest at once, if approached."

Captain Hutton remarks that this species is "common along the foot of the hills in the Doon; I have had the young ones in March from a hole in a steep bank of a ravine, at Rajpur; in April, also, a man brought word that he had found a nest, with nothing in it, but it was only just completed; waited for a fortnight, and sent a man to bring the eggs, but it again proved blank. The bird ascends sometimes in the summer to 5,500 feet."

Captain Cock says: "Coming home on the 17th March, at Dhurumsalla, I took a nest of *Ascalaphia bengalensis* with eggs. I shot the old bird. The nest was in a little cave in the face of a steep precipice full of little bones of rats and mice, one or two feathers, and only a slight depression in the sandy floor. Eggs hard-set."

Dr. Jerdon says: I have found its nest on a well-shaded ledge on the south side of a ravine, where the light of the sun could not penetrate at that season, *viz.*, March. It lays two or three white eggs."

The eggs of this species appear, comparatively speaking, very uniform in size and shape. Very perfect broad ovals, white with a faint creamy tinge; they are, but for a slight superior glossiness, scarcely distinguishable from those of *B. ocellata.* In texture, they are finer than the eggs of *A. coromanda,* and for the size of the bird, seem to me decidedly small. I note that I can scarcely believe that the egg figured by Bree as that of *A. ascalaphus,* Sav. really belongs to that nearly allied species, the egg being barely two-thirds the size of the smallest *A. bengalensis* I have yet seen.

The eggs of the Indian species vary from 2·05 to 2·20 inches in length, and from 1·65 to 1·8 inch in breadth, but the average of ten eggs measured is 2·10 by 1·73 inch. The egg figured by Bree is only 1·54 by 1·34 inch.

70.—*Urrua coromanda, Latham.*

The vast majority of these Dusky Horned Owls lay (in Upper India at any rate) in December and January, but I have found the eggs on several occasions in February and once early in March.

As a rule, they construct stick nests (which from the same pair resorting to them for many successive seasons, and adding to them yearly, are at times enormous) in the fork of some large tree. At times they appropriate some old nest of the Tawny Eagle (*A. vindhiana*) placed in some thick and thorny, but comparatively low Acacia tree. In most cases, the nests contain some lining of more or less green leaves, and a few feathers or a little grass. Occasionally I have found the eggs laid in the hollow of some huge stump, or in the depression at the fork of three or more large branches, with no stick nest, and only a few dry leaves as a bed, but out of more than thirty nests that I found one December in trees along the banks of the canal near Hansee and Hissar, all but one were regular stick structures. One nest contained no lining but a little dry earth. The great majority of the nests that I have examined, contained two eggs, often much incubated, but I once found three, and have heard of four being met with. In two instances, I see by my notes that single fully incubated eggs were found.

In this species I have invariably found the female sitting, but the male is always near at hand, and very commonly sitting on some branch immediately above the nest. I once shot a female, sitting on a partly incubated egg and on skinning her, found a second egg in the oviduct ready for expulsion. I have repeatedly taken one perfectly fresh, and one partially incubated egg, out of the same nest, and it seems clear that these birds, like the Harriers and many Owls, begin to sit directly the first egg is laid.

The eggs of this bird vary surprisingly in size and shape. Typically they are a broad oval, comparatively very large for the size of the bird, but long, oval, pyriform and nearly spherical varieties occur. I have taken a very great number of these eggs myself, and have extreme sizes of which the cubic contents of the one are fully double those of the other. In colour they are a decidedly creamy white, in texture often somewhat coarse, but, withall, more or less glossy. I have many specimens greatly exceeding in size the egg of *Bubo maximus* figured by Hewitson, while I have one specimen scarcely exceeding the egg of *S. stridula* which he figures.

The eggs vary from 2·2 to 2·55 inches in length, and from 1·75 to 2 inches in breadth, but the average of 56 eggs measured was 2·33 by 1·89 inch.

72.—*Ketupa ceylonensis, Gmel.*

The Brown Fish Owl breeds from December to March, but the majority lay, I think, in February. They always nest in the vicinity of water, sometimes choosing a cleft in rocks overhanging a mountain stream, sometimes a broad shelf in the clay cliffs of some river, sometimes a huge cavity in some old Banyan tree, and at times appropriating an old nest of *Haliæëtus Macei.*

Where they make their own nest, on a ledge or recess of a cliff, it consists of little but a few sticks, mingled with a few feathers, or when in holes of trees, of a few feathers and dead leaves, but when they annex an old nest of the Fishing Eagle, (and I have several records of this) they seem to line it more carefully with finer twigs, grass and feathers. I have never found green leaves under the eggs of this species.

Normally they lay two eggs; I have altogether records of nine nests, and in none of these were there more than two eggs or young ones.

Capt. G. Marshall writes: "This bird is pretty common in the Saharunpore District; it lays two round white eggs, and returns year after year to the same nest. I found one nest in a hollow in the fork of a Banyan tree about 25 feet from the ground, the hollow being so deep that the parent bird, sitting, could not be seen from the ground on any side. I found it accidentally, as I was climbing the tree for another nest. I watched it for three years; in 1866, on the 10th April, I found it with two young ones; in 1867, I visited it on the 17th March, and again found young ones; in 1868, on the 24th February, I found two eggs, the first of which was hatched on 14th March, the other egg I took. The tree in which the nest was, was a very large one, in a small grove of Jamun trees (*Eugenium jambolanum*), on the bank of an extensive jheel near Sirsawar."

Mr. Brooks mentions that he "shot a female on the 25th of February, sitting on two addled eggs. What little nest there was consisted of sticks and was placed on a shelf of the clay cliffs of the Jumna in the Etawah District. The shelf was slightly overhung, and on it, within twenty yards of the Fish Owl, a Neophron had her nest."

Towards the end of July, I found a pair of these Owls with two fully grown young ones, in a tiny cave in the rocky and precipitous banks of the Kosila, near Kakuree Ghat. The cave, the mouth of which was veiled by a large down-trailing Andromeda bush, had obviously been their nesting place, and though well concealed, was easy of access. There were a few sticks covered over with castings and remains of numerous birds and bones of small mammals. I turned the whole family out of their quarters, but did not otherwise molest them, an act of forbearance which I later had cause to regret, as they ceased not, the livelong night through, to give forth the most vociferous protests (from the cliff face, immediately above my tent) against, as I *suppose*, my neglect to honour them with a place in my museum.

On January 11th, 1867, I visited a large nest in a Peepul tree overhanging the Jumna below Sheregurh, Zillah Etawah, in which, both in 1865 and 1866, to my personal knowledge, a pair of *H. Macei* had reared their young. To my surprise, it was tenanted by a pair of *Ketupa ceylonensis,* which had carefully relined the nest, and had at that time a solitary young one in it, some seven days old, a ball of whitish down. On the nest we found two Quails, a Pigeon, Doves and a Mynah all with the heads, necks and breasts eaten away, but with the wings, back, feet and tail remaining almost intact. Two or three of them were quite dry, and one which I still have, is quite as good a specimen, as most of those that I owe to an eminent naturalist, who appears to preserve his birds by first pulling out half the feathers and then having what remains, carefully run over, on very dirty ground, by a heavy cart wheel!

On the banks of the Sutlej and again near Bhurtpore, I found nests which I had been led to as those of *H. Macei* occupied by *K. ceylonensis.*

"On the 10th February," says Mr. Blewitt, writing from Raepore, "a single egg of this Owl was secured; it was found on a little earth in the hollow of a large Mohwa tree where two branches had forked off; the tree was growing on the ridge of a rice field near some low jungle."

The eggs are very perfect, broad ovals, white, with, in most specimens, the faintest possible creamy tinge. The shell close-grained and compact, freely pitted all over its surface, but, nevertheless, more or less glossy. They seem to me undistiugnishable from many of those of *U. coromanda.* In size they vary from 2·29 to 2·44 inches in length, and from 1·84 to 1·94 inch in breadth, but the average of nine eggs measured was 2·3 by 1·88 inch.

74.—*Scops pennata, Hodgs.*

I retain Hodgson's name "*pennata,*" although *sunia,* of the same author, has priority, simply because I am unable to satisfy myself that these two forms, the rufous, and the rufous and grey or grey, belong to the same species.

Captain Hutton, who has repeatedly taken nests of this species, says that he has obtained nestlings of the same bright chesnut color as their parents. None of my twenty odd specimens exhibit a true transition from the grey to the chesnut plumage, nor have I ever yet seen a specimen that would not be instantly assigned either to the rufous or grey race. It remains to be decided whether the great differences of color observable between the two races are individual or hereditary, whether the rufous stage is analogous to the hepatic plumage of many of the cuckoos, whether it is assumed at one period of their existence by all members of the species, or whether some only assume it; and whether these retain it through life or only for a certain period; or, lastly, whether these are true allotropic forms descending in parallel lines and being transmitted regularly from parent to offspring.

Long ago Mr. Blyth (Journal, As. Soc., 1845, p. 550) made some remarks on this subject, in which (while he has altogether changed *his* opinion (*v. Ibis,* 1866) I am disposed to concur. He said :—

"It may be remarked that Mr. Jerdon now considers *Scops sunia* and *S. pennata* to be different phases of plumage of the same species. Until I obtain further data, I shall refrain from adding to what I have already stated on the subject; but I may remind the naturalist reader, that I have described three distinct states of plumage of *S. sunia, viz.*, the first or nestling garb, an intermediate dress in both sexes, and the mature livery which is almost uniform deep chesnut ferruginous, so that the variation to grey would certainly not appear to be dependent either on age or sex."

Professor Schlegel (*Mus. pays bas, Oti,* page 20) says that in this species the fourth quill exceeds a little the third; this, however, is a mistake ; in all the specimens that I have examined, whereof the wings were perfect, and the primaries fully developed, the third equals the fourth; this also is the case in the European *Scops Aldrovandi*; and also in my new species *Scops Brucei.* In other Indian species, *S. spilocephala, lettia, plumipes, grisea* and *malabarica,* the fourth exceeds the third by from one-eighth to one-quarter of an inch.

Of the present species, the Indian Scops Owl (*S. pennata*) I have never yet taken the eggs, but Mr. R. Thompson informs me that "they breed from March till August, in holes of trees, usually at no great height from the ground." He adds, "this is a common bird in our forests (Gurhwal), but I never yet took the trouble to take their eggs. Several pairs used to breed in the Botanical Gardens at Saharunpore. A pair has been breeding for three seasons in a small tree in front of the forest Bungalow at Kotedwara. Four years ago, a young one, in the rufous phase, was brought to me in the month of July."

This species, at any rate the grey form of it, occurs throughout the well-wooded portions of India and Burmah (except perhaps in the Punjab, west of the Beas, from whence I have seen no specimens whether from hills or plains), so that there should be no difficulty in obtaining full particulars as to its nidification.

74 *bis.—Scops spilocephala, Blyth.*

The distinctness of this species, the Bare-foot Scops Owl, is (now that I possess an ample series of specimens) quite unmistakeable; whether the name of *gymnopoda,* Gray is really applicable to it, an examination of the type specimen of this latter species now in the British Museum, can alone decide. If not, it should stand by Blyth's name, which he himself wrote on the wrapper of a specimen I now possess, and which, for the present, I retain. It is true that later not having the specimen by him to refer to, he fancied that the bird he had named *spilocephala* must have been *pennata*; but the species is really quite distinct, and should stand by the name assigned when it was first discriminated.

This species is at once distinguishable from *pennata,* which it resembles in size and slenderness of tarse, by its much more rounded wing, and broader and less pointed primaries by having the fourth and fifth the longest instead of the third and fourth like *pennata,* by its larger and truly spotted, and not streaked head, and by its entirely naked feet. This species is never so grey as some specimens of *pennata,* having always a more or less fulvous tinge, and it never apparently puts on the bright chesnut livery of the so-called *sunia* rufous stage of *pennata,* but one specimen of it which I possess from Darjeeling is throughout of a deep ferruginous brown, just as if one of the paler birds had been dipped in a solution of this color.

So far as I know this species only breeds, indeed only occurs, in the Himalayas, in well-wooded valleys, at elevations of from 3,000 to 6,000 feet.

It lays from about the middle of March to the middle of June, in holes of trees; no nest appears to be made; the eggs from three to five in number are laid upon the bare wood.

A nest of this species found near Kotgurh on the 30th April, in a hole in an Ash tree some 30 feet from the ground, contained five eggs; so very large for the size of the bird that, but for both parents being captured in the hole with them, one might have doubted their pertaining to this species.

Captain Hutton gives the following account of the nidification of this species (he calls it *pennata,* it is true; but he has sent me beautiful specimens of the birds, which leave no doubt that the species referred to is the present one) :—

" This Owl occurs on the Himalayas, in the neighbourhood of Mussoorie, at an elevation of 5,000 feet, and nidificates in hollow trees, laying three pure white eggs, of a rounded form, on the rotten wood, without any preparation of a nest. Diameter of egg, 1·19 by 1 inch. The nest was found on the 19th of March."

On a subsequent occasion he took a nest in April, and sent me the eggs which were considerably larger than those he first described.

From Murree, Captain C. H. T. Marshall writes : " We found a nest containing two eggs, in a dead tree, about 15 feet from the ground, on the 1st of June, low down the hill side. The bird shot off the nest answers exactly to Hume's description of *gymnopodus*; the elevation at which the nest was found was about 6,000 feet. The eggs are white and 1·3 in length by 1·1 breadth. We also shot an undoubted *E. plumipes,* but could not find a nest of this species."

He subsequently sent me the old birds which proved to have been correctly discriminated.

The eggs are very round and perfect ovals, pure white, and not very glossy, some of them fully as large as those of *bakhamuna* (*grisea* Jerd.), and even *plumipes*, both of which, the latter especially, are far larger birds.

The eggs vary in length from 1·19 to 1·33 inch, and in breadth from 1·0 to 1·13 inch, but the average of a dozen eggs is 1·26 by 1·09 inch.

75.—*Scops lettia, Hodgson.*

Professor Schlegel unites *lempigi, lettia,* and *semitorques;* but this is not tenable, seeing that *lettia* has the toes bare, while the true *semitorques* of

Japan and northern China has them feathered to the terminal joint. It is quite possible that *lettia* may be identical with the distinct race also found in China and long confounded with *S. semitorques;* but recently separated by Mr. Swinhoe as *S. glabripes;* but it certainly cannot be identical with the true *semitorques.* It is not identical with *lempigi* of which I now possess good specimens. Schlegel had no Javan specimens, and the Nepaul specimens, which he obtained from Mr. Hodgson, must have been the next species *plumipes,* or he could never have united them with his toe-feathered Japanese *semitorques.*

The only eggs that I have seen, unmistakably pertaining to the Nepal Scops Owl, were taken the 22nd May, 1869, out of a narrow cleft (completely hidden by a small drooping shrub) in an overhanging precipice, in the valley of the Surjoo, between Petoragurh and Almora, in Kumaon. They were described as laid on a few small sticks, or twigs, amongst which a few feathers were interspersed. In all other instances in which I have myself found, or have known of the finding of, the eggs of any species of Scops Owl in India, they have been in hollows of trees, but both parent birds were sent me in this instance with the eggs, and I had no reason for doubting my collector's good faith, who, although a native, is a very tolerable ornithologist, and so far as my experience goes, very careful and reliable. The eggs, three in number, were very spherical in shape, pure white and very glossy, and varied from 1·33 to 1·38 inch in length, and from 1·18 to 1·2 inch in breadth.

Two other eggs, *purporting* to belong to this species, were sent me from near Darjeeling. I cannot vouch for their authenticity. They measured 1·28 and 1·3 inch respectively in length, and 1·14 and 1·15 inch in breadth.

75 *bis.—Scops plumipes, Hume.*

Of the distinctness of this species from all other Indian Scops Owls, no doubt can possibly exist, but Mr. Gurney has suggested to me that it may very possibly prove identical with the *Scops semitorques,* Schlegel (Fauna Japanica, Plate 8). Of this species Schlegel gives the wing as varying from 6·6 inches to 7·7 inches. Our collection contains nine specimens, of which the wings vary from 6·7 inches to 7·1 inches, and some of these are apparently old females.

The general proportions and style of coloration of some at least of the specimens agree fairly with Schlegel's description; but the great difference in size makes me hesitate to identify the two species, nor should I *primâ facie* in this very variable genus expect to find a species which ranges in the Himalayas from Murree to Darjeeling identical with one in Japan.

Four eggs of this species, the Plume-foot Scops Owl, together with the female bird, were sent me from Kotegurh, where the latter had been captured on the eggs, in a hole in a tree. The eggs were taken on the 13th of May and were partly incubated. They are intermediate in size between those of *Athene brama* and *Athene cuculoides,* but they are more spherical than either. They are of course pure white and slightly glossy. They do not appear to be quite as large as some of those of *S. bakhamuna* that I possess.

In size, they vary from 1·25 to 1·28 inch in length, and from 1·1 to 1·15 inch in breadth.

75 *ter.—Scops bakhamuna, Forst.*

Pennants Scops Owl, (*S. grisea*, Jerd.), by far the commonest species of this genus in India, is widely distributed through the Punjab, the North-Western Provinces, Rajpootana, the Central Provinces and Oudh, and occurs, as I have recently ascertained, in Ceylon. Throughout these provinces it breeds; as a rule, being confined to the plains, and the lower ranges that intersect these, but occurring occasionally in the Himalayas also, to an elevation of say 6,000 feet. I have received specimens (in many cases with the eggs also) from Dera Ghazee Khan, Hansee, the Doon, Almora, Bareilly, Etawah, Jhansee, Saugor, Mount Aboo, Raepore, Sumbulpore, and intermediate localities, and lately from Ceylon. This species lays from the middle of January to the beginning of April, invariably, as I believe, in holes in trees, which it commonly lines, more or less, with leaves and grass. Four is the normal number of the eggs, but five are occasionally met with, and three fully incubated eggs or newly hatched young ones are often found.

Although I have taken the eggs of this species several times, I have, I regret to say, only one note on the subject " Puhpoondh (Z. Etawah,) March 10th, 1867. I caught a female *Scops grisea* to-day on her nest, at least, on one egg in hole in a Mango tree, which also contained about a dozen dry leaves and a few feathers, whether blown in by accident or placed there by the bird, I cannot say. The little animal bit and scratched so vigorously that I had to use a cloth to get her out; she fought so valiantly for her *penates* that I was sorry to sacrifice her, but it was important to preserve her skin to prevent future doubts as to the species to which the egg really belongs. She contained another fully developed egg, which my stuffer stupidly broke in skinning her. The egg was quite fresh; it looked a large egg as compared with those of *A. brama* (though it is shorter than some of these latter), owing to its great width. It is pure white, without any tinge, either of blue or cream colour, fine in texture, and almost as glossy as a Dove's egg. In size and shape, though a trifle more spherical than this latter, it corresponds almost exactly with Hewitson's figure of the egg of *Scops aldrovandi*. It measures 1·25 by 1·15 inch."

Mr. W. Blewitt found two nests, both in Sheeshum trees on the canal bank near Hansi. Both nests were in holes, the one contained one, the other two fresh eggs, a bed of leaves and straw being placed under the eggs. The nests were found on the 25th March and 2nd April.

The next year he procured at least a dozen more nests between the 18th January and the 2nd April, in the trees that fringe the Hansi and Hissar sub-divisions of the canal.

The eggs are pure white, glossy, and very spherical *as a rule*, though they vary a good deal in shape, some being slightly elongated and some slightly pyriform. In size they vary greatly; in length from 1·13 to 1·38 inch, and in breadth from 0·92 to 1·18: but the average of forty-eight eggs is 1·25 by 1·05 inch or precisely the same as the average of *A. brama*.

76.—*Athene brama, Tem.*

The Spotted Owlet breeds in February, March, and April; but the great majority of the birds lay in March.

Holes in old trees (scantily lined with a few dry leaves and feathers, decayed wood, or a little grass) are their favourite laying places; but holes in old buildings and clefts in rocks are sometimes resorted to. I remember Mr. Brooks telling me that in his office at Etawah two Rollers (*C. indica*) had chosen a hole, or rather spot to build in, on the top of the central wall of a gable roof, just under the main longitudinal beam. Two of these Owlets came and determined to breed there, and after a couple of days' fighting and screeching, &c., the Owls took possession of the Rollers' comfortable nest and there laid. The Rollers went round the corner of the same house, chose a new hole, built a new nest, and bred there. Generally, when met with out of holes in trees, their nests are more substantial than when in the latter; and in such cases I suspect the nests are more often theirs by right of conquest than by construction.

Mr. W. Blewitt writes: "I took four nests of this bird between the 16th and 21st March. Two contained three and two four eggs, one set of the latter only being at all incubated. The nests were in decayed hollows of Sheeshum, Jamun (*Eugenium jambolanum*), and Neem trees; the eggs were in each case more or less bedded in dry leaves, or feathers, or both." On another occasion he wrote: "I found several nests of this species near Hansie in the latter half of April. They were in holes of Peepul and Siris trees, and each contained three eggs laid upon a few blades of straw with a few dry leaves or feathers."

Writing from Sambhur, Mr. R. M. Adam remarks: "This bird is very common. A pair have their nest in the thatch of my house.

"On one or two occasions I have shot one of the pair, and found a mate occupying its place within the next two or three days."

They lay four or five eggs, most commonly the former. All are, when blown, a beautifully pure white; but until blown, have, when quite fresh, a beautiful pink tinge; and when a good deal incubated, are an opaque marble white. Most of them are of a close, uniform, satiny texture, but a good many are thickly covered in part or whole with minute pimples, if I may use the word, white, but, owing to the shell there being thicker, of a rather deader white than the ground.

Typically the eggs of *Athene brama* are oval. In some cases, broad and approaching the normal Owl shape, but more commonly only a moderately broad oval, differing little in colour, size, and texture, from those of some of our green pigeons, and some of the smaller specimens positively undistinguishable from large eggs of *Turtur risoria*. The largest specimen I have seen is smaller than the eggs of *Noctua Tegmalmi* figured by Hewitson, and, as above remarked, much less spherical. Out of some hundreds I have only one specimen nearly as spherical as his figure.

The eggs vary from 1·15 to 1·45 inch in length, and from 0·93 to 1·1 inch in breadth; but the average of fifty-four eggs measured was 1·25 by 1·04 inch.

77.—*Athene radiata, Tick.*

The Jungle Owlet is confined to the more jungly and forest clad tracts of both the plains and the lower hills.

It breeds in the early part of the hot weather, laying in April and May, in holes in trees. Though I have twice found nests containing young ones, neither I myself nor any of my numerous correspondents have yet, it would seem, obtained the eggs, which however, we may safely prophesy, will prove to be three or four in number, pure white, sphero-ovoidal, measuring some 1·25 by 1·05 inch, or thereabouts. Mr. R. Thompson, writing from Gurhwal, says: "This species breeds in May and June, in holes in small trees. It is very common in all the warmer valleys. Young birds are quite fledged in June; from three to four young ones at a time."

79.—*Athene cuculoides, Vig.*

The Large-barred Owlet lays from March to May; its eggs, four in number, are always deposited in some hollow or hole in a tree, without any nest, or at most, a mere apology for one in the shape of a few dead leaves, or a little dry touchwood.

Captain Hutton says: "I have found the nest of this species, which I at the time erroneously identified with "*nudipes*," in the neighbourhood of Mussourie, at elevations of between 5,000 and 6,000 feet. The eggs, three (or four) in number, round and pure white, are deposited in holes in trees, without nest."

Captain Cock, writing from Dhurumsalla, says: "I found their nests on three occasions, always in hollow trees. On two occasions there were four eggs in each nest, and the other time four young ones. Nests in hollow hill oaks some 20 to 30 feet from the ground. There was no lining to the nest, just a few dead leaves that might have been in the hollow accidentally. Eggs on each occasion varied in shape; but each nest of eggs retained its own characteristics: thus in one the eggs were all more spherical, in the other more oval."

Mr. R. Thompson, writing from Gurhwal, says that this species "breeds in May and June, in holes in large trees. It is quite as common as *A. radiata* in these forests, but has not the active sanguinary habits of the other. Many breed in the oak and fir woods above Khoorpatal. I had the young brought me once in June some three years ago."

The eggs which, as might be expected, are pure white and glossy, are rather large for the size of the bird. In shape they vary from almost perfect spheres to broad ovals, and are as nearly as possible like those of the Little Owl of Europe (*A. nudipes*).

The eggs that I have measured, varied from 1·38 to 1·48 inch in length, and from 1·17 to 1·24 in breadth; the average of twelve eggs being 1·41 by 1·19 inch.

80.—*Tæniоptynx Brodiei, Burt.*

The Collared Pigmy Owlet breeds so far as we yet know only in the Himalayas, the Khasia Hills, and the long range that runs down from these towards the Malay Peninsular.

It lays in May and June, in hollows of trees. It makes little or no nest, though a hole that I examined in July, containing four young ones, seemed to have been sparsely lined with feathers.

The eggs are doubtless four in number, nearly round and pure white but I have never yet myself obtained any.

The following is Captain Hutton's account of its nidification:—

"It lays its eggs in hollow trees without any preparation of a nest. On the 11th May 1848, I found three young ones and an egg just ready to hatch in a hole of a wild cherry tree. The egg was nearly round and pure white; but being broken, I could take no measurement of it. The young ones were clothed in a soft and pure white down. The old female remained in the hole while we cut into the tree, and allowed herself to be captured."

Mr. R. Thompson writes: "This species breeds from May to July, generally in holes in oak trees. I have usually met this bird with three young ones. In September the young are quite fledged."

Writing from Murree, Captain Marshall says: "We were unable to find the eggs of this species, but on the 22nd of June we secured three full-fledged young ones in a hole in a dead tree. We managed to rear these until about the middle of October, when they died suddenly, I fear, from too high feeding. The nest was at an elevation of between 5,000 and 6,000 feet."

82.—*Hirundo rustica, L.*

A few of the Common Swallows breed during April and May along the whole line of the Himalayas, from Cabool to Assam, at heights of from 4,000 to 7,000 feet. Rarely more than one or two pairs are found, as far as my experience goes, breeding in the same immediate neighbourhood anywhere to the eastward of Cashmere, and indeed eastwards of this happy valley it is only here and there that they are met with. I myself have only seen them breeding near Dhurumsalla, at two or three bungalows between Sooltanpoor in Kooloo and Simla, and at Simla itself. Captain Cock first pointed out to me that they breed near Dhurumsalla, where he procured their eggs. From Murree I have received a nest, eggs, and both parents. From Almora a single egg. Mr. Masson tells me he once noticed a pair building near Darjeeling, and Major Godwin-Austen writes that he found this species breeding at Asaloo in April in the high roofs of the Naga houses. The specimens shot were small, only 12 inches in extent, and may have been *gutturalis*. Jerdon mentions this bird as arriving early in July in Upper Burmah; they thus "probably breed along the whole line of high hills from the Burrail and Patkoi Ranges into North Burmah, &c."

In Cashmere they breed more numerously, from all I can learn, than in any other part of the Himalayas.

In Candahar, as Captain Hutton tells us, they breed abundantly.

On the whole, it would appear that, while a comparatively small number breed here and there everywhere along the southern faces of the Himalayas, the great majority of the vast numbers that during the cold season throng the neighbourhoods of our jheels and ponds seek Cashmere and other more westerly localities to rear their young in.

The nests that I have seen resembled much those of the Wire-tailed Swallow, but were deepeer and had the pellets of which they were composed larger and a good deal mingled with grass, &c. The nest sent me from Murree is a very perfect, rather deep, half saucer—two that I found containing young ones fixed in corners of verandahs, were mere quarters of very wide and shallow dishes—another in a tiny nitch in a beam, was a mere mud screen, shutting in the lower half of the nitch, with a few mud pellets inside apparently to round off the corners. All consisted exteriorly of pellets composed of mud, more or less mingled with dry fir needles, straw and the like—a coarser and far less tidy structure than that of the Wire-tailed Swallow. Interiorly the lining appeared to be chiefly soft feathers, but there was a little fine grass, and in one some gray, very soft, fur, which I could not make out.

There were four eggs slightly incubated in the Murree nest, but I believe they sometimes lay six.

The eggs of this species vary much in size and a good deal in shape. Typically, they are elongated ovals, a good deal compressed towards the smaller end. The cubic contents of some eggs must be nearly double those of others. The shell is very fine and compact, and has, in some eggs, a slight gloss. The ground color varies from pure white to a pale salmon pink, but in the majority it is white. Typically, the eggs are pretty thickly spotted and speckled with brownish red and inky purple, the markings being always most numerous, and at times very dense, towards the large end, where they occasionally form an irregular mottled zone. Occasionally, the brownish red is replaced by a slightly reddish olive-brown. In some eggs the markings want the speckly-spotty character of the typical egg, and are merely pale, inky-purple, and brownish-red clouds. In some, again, the markings are, as a whole, much more minute, and the whole surface of the egg is finally freckled and mottled with pale, brownish red.

In size the eggs vary from 0·7 to 0·84 inch in length, and from 0·5 to 0·55 inch in breadth; but the average of seventeen eggs was 0·76 by 0·53 inch.

83.—*Hypurolepsis domicola, Jerd.*

Mr. Davison remarks: "The Nilghiri House Swallow breeds on the western side of these hills from February to April, rearing (from what I have observed) two broods in immediate succession. The nest is composed of pellets of mud, thickly lined with feathers, open at the top, with the saucer-like depression rather deep; it is usually placed in some building, cave, or against some well-sheltered rock. The eggs, usually three in number, are white, spotted with brown and reddish brown, with a few larger markings of a purplish color. Occasionally four eggs are laid; but when this is the case, I have found that invariably only three hatch.

"About a week after the first brood have flown, the old birds begin to remove the topmost feathers of the nest, replacing them by fresh ones; three eggs are then again laid and a second brood reared. After this brood have flown, the old birds still continue to occupy the nest at night, or, more correctly, to occupy the edge of the nest, for they do not get into it, but merely sit close together on its edge. The same nest is occupied the following year, the upper feathers being only removed and replaced by fresh ones. Should the nest have been destroyed, a fresh one is built on the same site.

"The bird does not begin to sit till the full complement of eggs are laid, and both birds take part in the task of incubation."

Mr. Wait, writing from Conoor to the eastward of Ootacamund, remarks, that they "breed from April to June, building under caves, bridges, open sheds, &c., and generally against the sides of the rafters. The nest, composed of mud pellets worked together and lined with soft feathers, is somewhat irregular in its external shape, and has a rather shallow cup-like egg cavity some 2½ inches in diameter; they lay from two to five eggs, very round ovals, white, spotted with reddish brown."

Miss M. Cockburn, writing from Kotagherry, remarks :—

"They are fond of returning to the same places in which they build every year, and appear to prefer erecting their little nests in verandahs and eaves of out-houses. Many years ago, I remember watching for some days a battle between a cock-sparrow, and a pair of house swallows. The latter had finished their neat nest in our verandah, when the sparrow discovered it, and never left it except for the purpose of satisfying his appetite. The poor swallows saw they could do nothing, so they disappeared, and told their friends the sad tale in swallow language, and (as 'in the multitude of councillors there is wisdom') some time after to our surprise we saw a great number of house swallows, each with a wee lump of clay in its bill. They flew up to the nest, and succeeded in building up the sides. The sparrow inside doing his utmost to stop their work. But they being accomplished artisans in their own masonry, did not take a second to fix each piece of clay. It became a most exciting scene, and we fully expected the sparrow would have been imprisoned for life; but no, he was much too crafty to allow that. With one effort he burst through the very small hole which was unclosed and escaped, being attacked by all the swallows at the same instant. This conflict ended by the rightful owners having possession of their nest. They build here in the month of April, and lay two white eggs with dark specks and spots."

Dr. Jerdon says "I found it breeding chiefly in deserted bungalows and out-houses at Ootacamund; also at the Government wooden bungalows at the Avalanche. The nest, small, open at the top, and profusely lined with feathers; the eggs were two or three, white, spotted with reddish brown. It also breeds in houses at Nuwera Ellia, in Ceylon."

Mr. W. Theobald makes the following remarks on the breeding of this bird in Tenasserim: "Lays: in the second week of April. Eggs, three in number, long, ovato-pyriform; size, 0·77 inch by 0·52 inch; color, white, spotted and ringed with umber. Nest, a saucer of mud; inner part, coarse roots, profusely lined with feathers and vegetable down, attached to the under part of snags projecting some 4 feet above the water."

The eggs of this species closely resemble those of *H. rustica*, but are decidedly smaller, and are, I think, somewhat less glossy. They are moderately broad ovals, slightly compressed towards one end, have a pinky white ground, and are very finely speckled and spotted, thinly at the small end, more densely at large end, where there is a tendency to form a zone, with different shades of dull purple and brownish red. In some all the markings are comparatively large and coarse, in others excessively minute, and the intensity of the color of the markings varies much in different specimens.

In length the eggs vary from 0·64 to 0·77 inch, and in breadth from 0·48 to 0·57 inch; but the average size is about 0·7 by 0·5 inch.

84.—*Uromitus filifera, Steph.*

In the plains of India the Wire-tailed Swallow breeds chiefly in February and March, and again in July, August, and September; but I *have* seen eggs as early as January and as late as November. In the lower ranges of the Himalayas, where it breeds up to an elevation of from 4,000 to 5,000 feet, I have taken the nests both in April and May, and have had eggs sent me in June.

They breed almost exclusively in the immediate neighbourhood of water; under the cornices of bridges; under culverts beneath which some little pool remains; under overhanging shelves of rock or kunker, projecting from the faces of stony or earthy river cliffs; and in cells of buildings overlooking the water.

The nest is composed exteriorly of mud, and is usually lined with feathers; in shape, for the most part, about two-thirds of a deepish cup. I have a note of two nests which I took at Etawah at a canal bridge, March 8th, 1867; one contained three, the other two eggs. Those of the one nest were ready to hatch off; those of the other were quite fresh. The shell of the nest was made of pellets of clay. In shape the first was half of a wide cone, blocked up against the voussoir faces, just below an overhanging cornice. Internally it was carefully lined with a few fine roots of grass and many soft feathers, chiefly those of doves and parrots, so as to leave a neat hemispherical cavity for the eggs. The second was a deep cup, plastered against the face of the bridge, a little way below a square projection, and had absolutely no lining of feathers, only a few grass roots.

A beautiful nest taken by Mr. Adam in the Etmadoodowla Gardens at Agra in the third week in August, was a broad, shallow, half saucer of pellets of clay, about 5½ inches broad, and about 3 inches from front to back, plastered against one of the walls of the small cells facing the river and near the roof. Several other birds of the same species were breeding in the same cell. The bottom of the nest was about ¾ inch and the sides about ½ inch thick. The cavity was lined with fine grass roots and a very few feathers. It contained three fresh eggs.

Mr. Adam remarks: "On the 15th July, at Sambhur, I observed this species building in an old rest-house.

"The nest was half finished, and was placed in a very exposed place, under the cornice, about 10 feet from the ground. Both birds were bringing mud from an open well about 200 yards off, but the male seemed very inactive, and appeared to be shy of approaching the nest while I stood about 8 yards off with my binoculars watching the building operations.

"The mud was taken from the water's edge, each bird taking from eight to ten pecks at the mud to fill its bill, and sometimes with the mud a piece of fine grass was taken. When the birds reached the nest, the mud was discharged along the edge by shaking the head and body, much like the shaking which takes place when a pigeon is feeding its young. The grass or fibre was carefully worked along the edge of the nest, and great care seemed to be taken by both birds to make the portion attached to the wall very secure.

"On the 18th July I once took a nest with four eggs from an old well. The eggs are pinkish white with rust-colored spots and blotches. On several occasions during August, I have found the nest of this bird about old buildings along the Jumna near Agra. The nests generally contained three eggs."

Three, I think, is the usual number of eggs, but I have found only two, hard-set; and Mr. W. Blewitt, who took several nests during July and August, all built under canal and drain bridges in the neighbourhood of Hansie, found four eggs in two of the nests.

Where there is plenty of water, from three to seven nests will often be found quite near to each other; while where there is little water, they are usually quite solitary.

Dr. Jerdon remarks that "it breeds in old buildings, on walls, in stone bowries or wells, and very commonly under bridges, and in rocks overhanging water, making a small nest, open at the top, and laying two or three eggs, which are white, sparingly spotted with rusty red. I always found the nest single, and we seldom see more than five or six couples in one place."

The eggs are in shape a long narrow oval, a good deal pointed towards one end. In some there is a pyriform tendency, and some are so excessively long and narrow as to recall the eggs of *Cypselus affinis.* In texture they are fine and delicate, with, when fresh, a beautiful gloss, which, however, almost disappears as incubation proceeds. The ground color is white, or pinkish white, (when fresh and unblown, almost a delicate salmon pink, owing to the yolk partially showing through,) richly speckled, spotted, and blotched with various shades of reddish brown and brownish red. The extent of the markings varies greatly, as well as the intensity of their coloring. Some are spotted pretty uniformly all over; but in the majority the markings are most numerous at the large end. Occasionally, they are gathered into a well-marked zone towards this end; and one egg has a nearly complete cap of confluent markings, covering the whole of the larger end. These are the most richly marked Swallow's eggs that I know, and some specimens are excessively handsome.

The eggs vary greatly in dimensions, *viz.*, from 0·65 to 0·8 inch in length, and from 0·5 to 0·57 inch; but the average struck from a large number of measurements I find to be 0·72 by 0·53 inch.

85.—*Lillia erythropygia, Sykes.*

The Mosque Swallow, which is, as a rule, a permanent resident of the plains, breeds, according to my experience, from April to August.

Typically the nest, which is usually affixed to the under surface of some ledge of rock, or the roof of some cave or building, and which is constructed of fine pellets of mud or clay, consists of a narrow tubular passage, like a white-ant gallery on a large scale, say some 2 inches in diameter, and from 4 to 10 inches in length, terminating in a bulb-like chamber from 4½ to 7 inches in diameter externally. These nests have been aptly described as retort-shaped, and I do not think any lengthy description will convey a clearer idea of the typical shape. They are not always, however, of this shape. Indeed (though I am bound to say I cannot agree with him) Mr. F. R. Blewitt, who has probably taken more of their nests than any one else in India, is disposed to believe that the long retort-shaped nests are commonly built as residences, and the less developed ones as breeding places. He says: "Eccentric to a degree is this Swallow in the selection of a suitable place for its nest. I have obtained it on the ground, at the base of a rock, having for protection just a small overhanging ledge; in a hole in any old wall; affixed to the roof top of a pucka house; to the under ledge of a high rock, the arch of a culvert or bridge, &c.; but never, though they *may* occur there, 'in mosques and pagodas;" and "twenty and thirty together,' as stated in Jerdon. I have always found the nest single. The form and material of the nest depend mainly on the locality chosen for it. Sometimes a simple collection of feathers answers the purpose, at others, as when attached to a roof top, ledge of rock, &c., it is more or less dome-shaped, the exterior of fine clay, the inside lined with feathers. The opening for egress and ingress is invariably made above the centre of the nest. Frequently have I seen the 'spherical or oval-shaped mud nest with the long neck or tubular entrance,' described by Jerdon, but only *once* with eggs in it. This peculiar shaped nest is also constructed at times by *H. filifera,* and from frequent observations I have sometimes fancied that it is intended more for a winter residence than for breeding purposes. I have recently observed many of both species actively employed in the construction of these nests, long after the breeding season was well over. In the beginning of August, I robbed a nest of *erythropygia,* found attached to the roof of an out-house; and in the identical place from whence I had removed the former nest, the same pair of birds have now nearly completed a new nest, 'oval-shaped, with the tubular entrance,' for, as I suppose, a winter retreat. The birds only occupy it at night. The eggs are pure white, and four appears to be the greatest number."

During the breeding season, the old birds fly round about their nest, morning and evening, uttering quite a variety of rather pretty, somewhat musical, notes. During the day they remain near, and one of them generally in, the nest, or the pair may be seen perched on some stone below the nest, sitting for an hour at a time preening their feathers, the male every now-and-then singing a few notes. Old quarries, like those near Futtehpore Sikri and Chunar, are favourite breeding haunts of this species; and so are the old moslem ruins that abound so in Upper India.

The nest chamber is lined, sometimes thickly, sometimes thinly, with feathers only, as a rule, but occasionally with a mixture of these and fine grass.

They are not easily driven away once they have made a nest. I have broken into nests twice running, to see if any eggs were laid, and each time the birds have repaired the nest, in which, despite these repeated burglaries, they have finally laid.

Mr. Davison remarks: "This species breeds on the Nilghiris about the commencement of April. The nest, as usual with Swallows, is composed externally of mud, and thickly lined with feathers; it is shaped like the half of a Florence flask. It is placed generally against the roof of a cave or overhanging rock. The eggs are generally three in number, pure white, and of rather an elongated form. Several nests are often placed close together, and often some favorite site is apparently the bone of contention between several pairs.

"I once found a few miles out of Ooty several nests of this bird placed on the under side of a large overhanging rock, and although the breeding season had long passed (it was, I think, in the early part of November that I found these nests), I nevertheless climbed up to where the nests were, to see if there were any addled eggs. After examining a few of the nests, I came to one which had the tubular entrance walled up, and the mud perfectly hard and dry. On breaking away a part of the nest I found a dead bird in it, which had come quite to the sealed end of the tubular neck, and had there died; the nest contained three old eggs, of which the contents had partially dried up. I can only account for this bricking, or, I should say, walling up of the entrance to the nest, by supposing that some of the other birds had coveted, and failed to obtain this site for their nests. It is only natural to suppose that more than one pair were concerned in the business, as it would have taken at least one bird to keep the bird from leaving its nest, and another to keep its mate away from the nest, and probably another, or several other pairs to close the entrance."

Dr. Jerdon (who, however, did not discriminate this and the next species) states that "a few couples, at all events, breed in the south of India; for I have seen their nests on a rock at the Dimhutty water-fall on the Nilghiris, twenty or thirty together. I have found one or two nests in deserted out-houses in Mysore; and they are said to breed very constantly on large buildings, old mosques, pagodas, and such like; hence the native name of Mosque Swallow in the south of India; but I rather think there is a considerable increase of their numbers during the cold weather, and it was no doubt at the time of their northward migration that Colonel Sykes saw them in such vast numbers at Poona. The nest as figured by Pallas, and observed by myself, is a spherical or oval-shaped mud nest, with a long neck, or tubular entrance, of the kind which is called a retort nest, and the eggs are white, faintly marked with rusty-colored spots."

Miss Cockburn, writing from Kotagherry, says: "I only once found a nest, and this was on the 9th April. It was constructed under a shelving rock, raised so high from the ground as to allow of my walking under it. The cave, if I may so call it, was in a wild, lonely locality, rather suggestive of Bears than Swallows.

"The nest, which was built of clay, was about ½ foot long, the entrance being at one end. It was warmly lined with feathers, and contained three pure white eggs, very long in shape. As I wished to know if the number would be increased, they were left for a couple of days. On visiting the spot again, I found the length of the nest had been *increased* considerably, the eggs being left at the far end; but as there were no more than three, they were taken possession of."

I also have noticed the birds (or one of them) still building and yet found eggs more or less incubated within.

The eggs are pure white, with scarcely any perceptible gloss; generally a long oval, occasionally somewhat pyriform in shape, and rarely very long, and narrow like those of our Indian Swift. They are perfectly spotless; and so far as shape and size goes, the egg of *L. daurica* figured by Bree sufficiently correctly represents an average specimen. Many eggs, however, are longer and narrower than that figure, and while all are, as in the figure, somewhat pointed towards the end, some are conspicuously so. Whether the birds that breed so commonly about our houses in the Himalayas are really, as I consider, entitled to specific separation from their plains representatives, is still a moot point with some Ornithologists; but undoubtedly the eggs that I have obtained in the hills are, as a rule, slightly larger than those taken in the plains.

Of these latter, I have a large series from Agra, Chunar, Jhansie, Mount Aboo, Saugor, and the Nilghiris. They vary from 0·75 to 0·83 inch in length, and from 0·52 to 0·6 inch in breadth; but they average about 0·78 by 0·55 inch.

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85 bis.—*Lillia daurica, L.*

This, the larger of our Indian Mosque Swallows, although visiting during the cold season the plains of India, breeds, so far as I know, exclusively in the Himalayas—I mean, of course, within our limits.

It is very familiar about the houses of most of our hill stations, but I think constructs its nest by preference under the eaves and in the verandahs of empty houses and staging bungalows, which are seldom in the hills occupied for many successive days in any month. At the same time its nest is often to be seen under projecting ledges of cliffs, and occasionally, where these occur, in ruined buildings.

The breeding time, according to my experience, is from April to August; but I have taken a dozen eggs in July to one in any other month. The nests are very similar to those of its plains congener, long and retort-shaped, very neatly built with clay pellets, as a rule very warmly lined first with grass or fibres and fine roots, and then with various-sized feathers, of which there is often quite a large bunch. They average, however, much larger than those of *erythropygia*, and one I recently measured had the tubular entrance 13 inches in length and the chamber more than 7 inches in diameter exteriorly.

Mr. Brooks remarks: "The nest is always a *half-retort*, fixed to the underside of an overhanging rock or cave generally with only one entrance; but a friend of mine, Mr. Horne, gives me an account of one fixed to one of the verandah rafters of a house where the nest has two entrances.

"In the hills about Almora I found the nest several times, sometimes in open exposed places, at other times where the rocks were overgrown with wood. The eggs resemble those I took in the plains. The plains bird does not breed till the hot winds are over, end of June or beginning of July; but in the hills I found eggs nearly hatched in May. Others at Binsur, Mr. Horne informs me, have only just laid in the middle of July, when I write. The hill bird breeding in the verandahs of houses, as well as in eaves, accords with the habit of the Chinese bird (*daurica*), which Mr. Swinhoe remarks "breeds under the roof tops."

Captain Hutton says:—

" This is the common Swallow of the Doon and hills arriving in the latter locality in March, and building its retort-shaped nest of mud beneath the eaves of houses, against window frames, at the side of verandah beams, and other suitable situations; the lining is of feathers. Some eggs taken on the 29th of May were hard-set, but other broods were still earlier, as a nest placed against the window of my room had then contained young ones for some days previously. During the heavy mists of the rainy season, these nests often fall by their own weight from the quantity of moisture imbibed.

"When far removed from houses, these birds resort to lofty rocks, beneath the ledges of which the nest is placed. Its shape is flattish hemispherical, with some variation, being at times more globose, with a long neck forming the entrance passage, and thus giving the nest a retort shape. When the bird has selected the spot on which it intends to build, it usually deposits a white chalky substance, by way of cement, against the wall or beam, as the case may be, as an adhesive foundation for the subsequent wall of mud. Without this precaution the weight of the material would cause it to part from its foundation. This same whitish earth may also be seen in the narrow neck of the nest, more especially at the mouth, where strength is required to resist the constant abrasion that would otherwise ensue from the frequent entrance and exit of the bird. Generally speaking, this chalky cement is applied to any part that may from circumstances appear to require strengthening, as it likewise gives consistency to the mud. Sometimes if the situation affords sufficient room, the long neck projects in a straight line from the body of the nest; but where the space is confined, or an obstacle interposes, the neck is turned off at an angle, and in such cases there is pretty sure to be a layer of the chalky cement at the point of deviation from the previous direction. When, however, the material is of a sufficient consistency to be adhesive without the cement, none is applied. In the construction of the nest the mud is laid on in small rounded lumps, which gives a rude and knotty appearance to the surface. The lining is abundant, and is composed of fine grass and feathers.

"There are frequently two broods from the same nest in the same season, the first in the end of May and beginning of June, the other in July and August. The birds that built against my window reared one brood in June, and, as soon as the young were able to fly, they were escorted by the old birds during the day and were initiated in the art of fly-catching, returning to the nest about sunset or earlier if the rain was heavy. This continued for about ten days, when the young birds disappeared, and the old ones laid again in the same nest towards the end of July."

The late Captain Beavan mentions that he "found a nest which was built in the verandah of the dâk bungalow at Fagoo on the 2nd August 1866. It was then but just finished, and the female had not yet begun to lay her eggs. The nest is like that of *H. rustica*, made of mud, but has a funnel-shaped entrance, some 4 or 5 inches in length, continued from the top of the nest along the angle caused by the meeting of the wall and the roof. The female keeps inside the nest; and from the continued twittering which she made when visited by the male, I thought at first that the nest contained young; and it was not until I drove her out that I discovered my mistake."

Writing from Murree, Captain C. H. T. Marshall remarks :—

"This is the House Swallow of Murree—breeds under all the eaves. Lays pure white eggs in June."

The eggs of this species are similar to those of *L. erythropygia*, except that they are slightly larger. They are long ovals, slightly compressed towards one end, pure-white, the shell of exquisite fineness, and somewhat, but not very glossy.

In length they vary from 0·81 to 0·89 inch, and in breadth from 0·55 to 0·6 inch, but the average is 0·85 by 0·55 inch.

87.—*Lagenoplastes fluvicola, Jerd.*

The Indian Cliff Swallow is one of the commonest of our Swallows in Upper India, at any rate. From the Tonse River near Mirzapúr to the Sutledge near Ferózpúr, it abounds wherever there is water and cliffs or ruined buildings, against which it can plaster its huge mud honey-comb-like congeries of nests. In the Doon, under the Solanee Aqueduct, in Ajmere, at Ahmedabâd, in Guzerat, in Saugor, in the Central Provinces, and twenty other places, I have noticed numerous colonies in and on buildings, and as for breeding in cliffs, to give one single instance, (and I could give fifty), visiting the River Chambal where the Etawah and Gwalior Road crosses it, and following its course downwards to its junction at Bhurrey with the Jumna, one will meet with at least a hundred colonies of this species, all with their clustered nests plastered against the faces of the high clay cliffs which overhang the river.

They breed, according to my experience, from February to April and again in July and August; they build a small, more or less retort-shaped mud nest, in clusters, of from 20 to 200, packed as closely as possible, so that a section parallel to the wall or cliff face against which a colony has established itself, and about 4 inches away from the wall, would present an appearance much like that of a honey-comb, though the cells would be less regular. The tubular mouths, from 2 to 5 inches long, all point outwards, but those of the exterior nests of the cluster are generally turned somewhat. The chambers vary a good deal in size, but average about 4 inches in diameter. Their nests are to be found equally in the wildest and most desolate, and again, as at the Kotwalee in Dehra and the city gate at Ajmere, in the most thronged and frequented localities.

The nests are well lined with feathers, and I remember more than once that when robbing these nests, numbers of feathers were carried away by the wind, all of which the little Swallows industriously captured in their mouths, but at last not knowing what to do with them, the men being still at work at the nests, apparently reluctantly, let them fly.

Mr. R. Thompson says:—

"I found large numbers of this Swallow breeding in the Central Provinces, especially about the fine arched bridges which span the rivers on the Great Northern and Deccan road."

Mr. F. R. Blewitt enquires:—

"Does this bird breed twice in the year? I ask the question for the following reason. Though I have occasionally seen this Swallow in other localities, yet only at Talbehut have I found the nest. On the side wall of a Hindoo place of worship facing the main road of the city, there are clustered closely together above one hundred of these 'retort-shaped' nests. When I passed there in the latter end of April, the birds, a perfect colony of them, were breeding.

"Owing to the strong prejudice of the people, who would not permit the nests to be robbed, I with difficulty secured four eggs. Again, in the same nests, the birds were found breeding in August, and some twenty eggs obtained. Four appears to be the regular number of eggs."

So far as I can judge, *three* is the normal number; I have opened a very large number of nests, and only twice or thrice found more than three eggs.

The eggs of this species vary much in size, shape, and colour. Typically, they are a long oval, a good deal pointed towards one end, but some are fairly perfect ovals, while others are pyriform, and here and there a nearly cylindrical variety is observable. They are smaller, as a rule, than those of *L. erythropygia*, and more glossy, resembling in these respects those of *U. filifera*. The ground colour in all is white, a good deal tinged, when fresh and unblown, with pale salmon colour due to the partial transparency of the delicate shell. About half are pure and spotless white, the rest are more or less streaked, mottled, speckled or clouded with pale yellowish, or somewhat reddish-brown. The markings are never bold or sharply defined as those of *filifera* so commonly are; and though the difference may not be very apparent by the description, in practice, the two eggs could not well be confounded. As a rule, the markings are most numerous towards the large end, where they have a tendency to form an ill-defined mottled cap, and in many eggs they are almost entirely confined to it.

In length the eggs vary from 0·65 to 0·8 inch, in breadth from 0·48 to 0·58 inch, but the average struck from fifty eggs is 0·76 by 0·53 inch.

88.—*Cotile subsoccata, Hodgs.*

On the 11th of January 1867, I came across a colony of Sand Martins, breeding in the high sandy banks of the Jumna, below Sheregurh, very near in fact to the joint boundary of Etawah and Cawnpoor. I shot two of the birds and got some eggs. I revisited the spot on the 12th March, and again shot a pair of the birds and obtained more eggs.

Later, examining the specimens, I found that they differed from some specimens I had of *sinensis*, exactly as pointed out in Sir W. Jardine's letter to Adams, and accepted them as distinct. Further experience has led me to doubt the value of the diagnostic points indicated by Jardine. If distinct, I can say this much of the nidification of the Dusky Sand Martin.

They build in communities in sandy banks overhanging rivers. They bore a small hole, about 3 inches in diameter, from 1½ to 3 feet deep, into the bank, usually sloping a little upwards, at the end of which they scoop out a sort of chamber, say 6 inches in diameter; there they make a nest of very fine twigs and grass lined with a few soft feathers of the wild goose, brahminy and such like water-fowl; they lay from two to three eggs.

The eggs are white and glossless, closely resembling those of *sinensis* and *riparia*, from which it would be difficult to separate them. Normally, they are a pointed oval, but somewhat cylindrical varieties occur. They vary a good deal in size as do those of all the allied species.

The eggs that I took of this supposed species varied from 0·65 to 0·75 inch in length, and from 0·48 to 0·52 inch in breadth, and they averaged 0·69 by 0·5 inch.

89.—*Cotile sinensis, Gray.*

Our Indian Sand Martin breeds in holes in sandy banks of rivers from November to February in some parts of the country, and during April and May in others, and again at both periods in others.

Mr. Blyth remarks (Journal, As. Soc., XVI, p. 119) :—" I have found both newly-laid eggs and young ready to fly in the beginning of December (at Calcutta), and also at the end of February. The nest holes vary in depth from 1½ foot to considerably more, according as the banks are more or less hard, and the nest itself is composed of dry grass, with occasionally a few feathers in the lining; the eggs are pure white, like those of *C. riparia*."

Captain G. F. L. Marshall, writing from Saharunpoor, says that this species "builds in the first half of April in a hole about 4 feet into a bank, lining the end of the hole with grass and a few feathers, and lays five pure white eggs." I myself have taken the eggs in May on the Jhelum, and on the Jumna in the Etawah District, in February and April, but I have never found more than four eggs.

From the Sambhur Lake, Mr. R. M. Adam tells us: "The little Bank Martin is very common about this. I obtained a nest on the 15th April with two very hard-set eggs. The nest was found in a hole in a bank, and was a compactly built cup-shaped structure: outer diameter 4 inches; egg receptacle a little over 2 inches. The nest was made of grass and fibres well rounded together; the outer portion of the nest was of a coarser quality than the lining, but made of the same material; depth of egg cavity ¾ inch.

"In Oudh I took a nest of this bird on the 23rd April. The nest was composed of coarse grass loosely put together, and had a lining of biggish feathers. Its diameter measured 3½ inches."

The eggs of this bird, like those of all the kindred species, are pure white and devoid of gloss. In shape they are oval, a good deal pointed towards one end; and so far as size and shape goes, they appear to differ scarcely perceptibly from those of *C. riparia* and *C. subsoccata.*

They vary in length from 0·63 to 0·73 inch, and in breadth from 0·45 to 0·53 inch. The average of a large series is 0·68 by 0·48 inch.

90.—*Ptyonoprogne concolor, Sykes.*

The Dusky Crag Martin breeds at least twice a year. In the plains of India, I have mostly found the eggs in January, February and July, but I have seen them in April; and writing from the Nilghiris, Miss Cockburn says:—

"These small Crag Martins build in the months of April and May. One nest was constructed in a small cave which had been dug out of the earth where some pretty ferns and moss were growing; I admired the Martins' choice of a site for the abode of their young during the few weeks they might require a dwelling place. The nest was of clay and of a cup-shape, lined with many feathers, and had two white eggs with minute dark spots all over them, but particularly at the thick end."

The nest is solitary, very like the Wire-tailed Swallow's, but deeper and smaller, coming to a well defined point below; it is lined with feathers.

Mr. F. R. Blewitt says: "This species breeds in both the cold and hot seasons, though I have obtained most eggs in July and August. It has its nest in holes of walls, on projecting eaves, and sometimes on the ledges of rocks, where convenient shelter is afforded.

"The nest lining is composed of soft flowering grasses and feathers, the latter forming as it were the inner lining.

"The regular number of eggs appears to be four. Strictly speaking, it does not breed in company, though at Talbehut I have seen two and three pairs together, occupying as many holes in the old fort wall, near to each other. Doctor Jerdon justly remarks of this Martin that it is scattered sparingly. I have found it only in the vicinity of old forts and mosques, and but few in number. When flying, or rather while feeding on the wing, two and three together, they alternately chirrup to each other. It is a *chit, chit, chit,* rapidly uttered in quite a soft melodious tone."

Mr. R. Thompson writes to me that in the Central Provinces the majority, *he* thinks, breed in March and April, but certainly in Jhansee and Saugor, January and July are *the* months.

The eggs of this species are intermediate between those of *L. fluvicola* and *U. filifera,* so far as the character, extent, and intensity of markings go. The ground colour is white, and they are all more or less thickly speckled, spotted, and, at times, though rarely, blotched with different shades of yellowish and reddish brown. Unlike those of *L. fluvicola* which are as often pure white as not, these eggs are always pretty thickly marked; but these markings, though better defined and darker than those of *fluvicola,* are neither so bold nor so bright as in *filifera.* As in both these species the markings are always most dense towards the broad end, where a more or less ill-defined zone or irregular and partial cap are not uncommon. In length they vary from 0·68 to 0·75 inch and in breadth from 0·5 to 0·56 inch. The average of a large number of measurements is 0·72 by 0·52 inch.

91.—*Ptyonoprogne rupestris, Scop.*

The Crag Swallow only breeds, so far as I know, amongst precipitous rocks in the Himalayas at heights of from 7,000 to 10,000 feet.

I once found a number breeding on the road from Mussoorie to Simla, not many miles from the new hill station Chukrata. This was at the end of April, and I got both eggs and young birds.

The nests were composed of pellets of clay, and were mostly rather deep saucers plastered in angles of the cliff under projecting ledges. They were warmly lined both with grass and feathers.

I have no eggs now by me. I did not keep eggs in those days, but I noted that they were long oval pinky-white eggs, with numerous specks and tiny blotches of brownish red and purple.

93.—*Chelidon cashmeriensis, Gould.*

The Cashmere Martin breeds only in the interior of the Himalayas. It lays, as far as I *know,* only in April and May, but is said to have a second brood during the rains. Long ago Mr. E. C. Buck wrote to me that "there is a large colony of these birds about 1½ to 2 miles from the Muttyana Dâk Bungalow on the *old* road to Narkunda; their nests cover the roof of hollows in the rock about 15 to 20 feet from the ground. Nest of mud, shallow, cup-shaped, with largish aperture, very close, one above the other in many instances. Young birds appeared fledged in June when I passed. Birds frequented breeding places at dusk in great numbers. The hollows are almost overhanging the old road."

98.—*Cypselus melba, Lin.*

I have never taken the eggs of the Alpine Swift, nor do I know any thing positive of its nidification within our limits. I have however several of their nests sent me by Miss Cockburn from near Kotagherry (Nilghiris).

They had been built against a rock more or less overhung by slabs of rock. They consist chiefly of feathers firmly cemented together with saliva, but vegetable fibre of different kinds and dry grass also formed part of the thick, coarse, felt-like mass.

Three or four nests at least appear to have been grouped together in one mass. One chamber which is perfect, measures about 5 inches in diameter and was about 3 to 4 inches in height. The walls of the nest average about an inch in thickness, but in many places owing to the necessary fillings-in where the more or less circular chambers meet each other, there is a much greater thickness of material; and where two chambers are nearest to each other, the partition wall rarely exceeds ½ inch.

100.—*Cypselus affinis*, *Gray*.

The common Indian Swift breeds throughout the plains of India, and in the Himalayas up to a height of about 6,000 feet. I cannot hear of its breeding at all high up on the Nilghiris, but I found it on the Aravalis breeding at the top of Taragurh and on Mount Aboo.

It has at least two broods a year, and eggs may be found any time from February to August, both months included.

It is very capricious as to its choice of a nest-site, but having once secured one to its liking, returns thither with a pertinacity that no ordinary persecution in the way of robbing and destroying nests will overcome. They breed in company; solitary nests are, as far as my experience goes, unknown; from a dozen to fifty pairs will be found nesting together; the nests either clustered together in one dense mass, as when they choose the roof of some little cave, or the interior of some old Moslem dome, or Hindoo shrine, or else scattered about in little groups, in close proximity, as when they occupy a verandah, and each pair of rafters has its half dozen nests. Perhaps, on the whole it prefers inhabited to deserted buildings, but I have found its nests a hundred times in both.

The nests vary very much in size, shape, and material. I have taken them from between two very closely set rafters in a railway station, long half tubes a foot in length, some 4 inches in external diameter, composed wholly of feathers cemented together by saliva, and scarcely ½ inch in thickness. Two now before me are large masses, 10 by 6 and 2½ to 3 thick, of grass, in which many feathers of Doves, Parrots, Peafowl, Sarus, Duck, some little sheep's wool, and a bit or two of twine, are all mingled. The bottom portions are a good deal cemented together by saliva, but the interior is by no means hard or smooth; others again are *much* smaller, globular, and having the whole of the materials firmly agglutinated together. In the plains they are not generally lined, but in the hills they often have a warm lining of grass and feathers. Captain Hutton says:—

"This is a very abundant species at Jeripanee, below Mussoorie, coursing and screaming through the air with great rapidity and shrillness. It does not construct a nest of mud like the common Swallow, but attaches straw, rags, flax, and feathers, all together by a glutinous cement, beneath the roof of verandahs between the beams. The nest, although made of such frail materials, which are not interwoven like those of other nests, but simply glued together, is nevertheless exceedingly tough, and will resist a moderate poke from a stick. It is lined with feathers and straw, and the eggs much resemble those of *H. daurica*, being pure white, and of a narrow, lengthened appearance. With us it breeds in June and July, laying from two to four eggs."

Writing from Sambhur, Mr. R. M. Adam remarks: "This Swift is very common, and builds in the old tombs and mosques. I found a *congeries* of about thirty nests in a small tomb, and these were all closely packed together; some had openings at the sides, while others had tubular-shaped necks about 2 inches long, projecting from the side of the nest. The nests were composed of pieces of straw, fine twigs, cobwebs, and fluffy feathers, all agglutinated together, with here and there some bright-colored feather of a Parrot or Roller stuck carelessly on the outside. A nest which I detached measured from opening to end 7½ inches, in breadth it was 4 inches, and the opening was 2 inches in dimeter. The nest was oval in form, coarse, and lumpy in texture externally, but comparatively smooth inside. The egg cavity had a lining of fine feathers, and the entrance was lined with fluffy feathers. Nearly every nest contained a bird; and in some cases I found two birds."

Dr. Jerdon states that "their nests are composed of feathers, grass, straw, cotton rags, sometimes pieces of paper, agglutinated firmly together by the secreted mucus of their salivary glands, occasionally perhaps mixed with mud and rubbish. The inside of the nest is hard, glistening, and smooth, and feels, says Theobald, "like coarse cardboard." They vary much in shape: sometimes a first year's nest is open at the top; but they are usually closed, and communicating at the side; at times of moderate size, at other times very large, and communicating by a sort of tubular neck. They are very solid and heavy, and often closely packed together. They are built against the rafters or beams, under the roofs of huts and houses, in the corners of old stone buildings, and in verandahs, either inside or outside, if there is protection from sun and rain. Various observers describe the nest as somewhat differently constructed. Burgess says that he has seen their nests crowded together under the roofs of old buildings, choultries, and temples; one nest from a rock was built of mud, lined with grass, and contained two white eggs. Layard states that in Ceylon they breed in great numbers on rocks, also under bridges, and that the nests, built in clusters, are composed of mud and grasses, with a small round entrance, precisely resembling those of the Martin (*H. urbica*); the eggs from two to four in number, pure white. Adams says that the nest is of mud, mixed with wool and feathers. In some of these cases the great weight and solidity of the nests may have led the observer to conclude that they were made of mud. The nest has generally a slight hollow in one place for the reception of the eggs, which are usually two in number, sometimes three, and pure white."

I may here add that I have seen not hundreds, but tens of thousands of these nests in all parts of Continental India; and that, like Jerdon, I never knew of this species using any mud in the construction of its nests.

I think three is the nominal number; I have certainly far more often found three, or even two, than four eggs.

Typically, these eggs are excessively long and narrow ovals, pointed towards one end, and often somewhat pyriform in shape. They vary, however, much both in size and shape; and of specimens of my own taking, some are fully one-third longer than others, while the cubic contents of one egg I have must be fully twice that of another. In color they are of course a perfectly pure and spotless white, with commonly scarcely a trace of gloss, though occasionally a slightly glossy egg is met with. Several specimens I have are fully as long as the egg of *Cypselus apus* figured by Mr. Hewitson, but their breadth is rarely even five-sevenths of the one there represented.

In length these eggs vary from 0·72 to 1 inch, and in breadth from 0·52 to 0·62 inch; but they average 0·87 by 0·57 inch.

102.—*Cypselus palmarum*, *Gray.*

The Palm Swift breeds, I think, twice in the year; at any rate I have myself taken the eggs in March, and again in July, and I have had them sent me in the latter part of June, and early in April.

They nest solely on the " *Tar* " or Toddy tree (*Borassus flabelliformis*).

The large fan-shaped leaves of this palm get bent by the wind, and hang down so that the points of the leaves turn somewhat inwards; and it is to the under surface of that portion of the leaf which is bent inwards that the nest is attached.

The bent portions of the leaf stand at an angle of from 40 to 70 degrees, so that the under surface becomes in fact the upper surface, and presents a sloping furrowed bank to which the nest is attached. In one of these furrows formed by the large plaits of the leaf, and always about the centre of this latter, a tiny watch-pocket shaped nest, composed of fine down of the *Argemone mexicana* and other plants, or in other cases of fine feathers cemented together by the saliva of the bird, is firmly glued. The actual pocket of the nest is rarely above 1½ inch in circumference and ¾ of an inch in depth, but the back portion of the nest runs up the plait from 2 to 3½ inches. It is a curious fact, that while the rest of the nest is pretty soft, the edge of the pocket in front is matted into a sort of cord, just as in the case of the watch-pocket a piping is run round the edge. In one or two nests that I have seen, the birds have incorporated the soft petals of the white poppy (so largely grown for opium in Behar where this species is specially abundant) with the other materials of the nest.

As a rule, only one or at most two pairs are found breeding on the same tree; but I once saw a whole colony located in a single palm.

Three appears to be the usual complement of eggs, but Mr. R. M. Adam, from whom I first of all received the eggs and nests of this species, informs me that he has found as many as five in a single nest.

Mr. R. Thompson, writing from the Mirzapoor District on the 18th March 1869, remarked: " On a Toddy Palm (*Borassus flabelliformis*) I observed several nests. With some difficulty I got down one with two eggs, one of the eggs unfortunately got broken. The nest was stuck between two ribs of the leaf of the Palm, and the female bird looked as if she was sitting up against it—so small did the nest look, and such the apparently uncomfortable attitude of the occupant.

" Near the nest was a colony of bats, '*Nycticejus castaneus.*' I killed out of the lot in one shot twenty-one bats. The Palm was alive with them, and with the swifts. I noticed these birds clustering on the leaf of the palm between the ribs of the fronds. When moving up and down, they crawled with a shuffling kind of motion, as if their legs were too short for progression."

Mr. W. Theobald again has the following on the breeding of this bird in Monghyr and Prome*:—" Lays in the third week of June and in July. Egg, three in number, long pyriform; size, 0·80 inch by 0·45 inch; color, pure white. Nest of vegetable down, with a few feathers agglutinated with mucus to the frond of the *Borassus.*"

The egg, a miniature of that of *C. affinis*, is a long oval, slightly compressed towards one end. The texture of the shell is somewhat fine, but it has commonly little or no gloss. In color it is a pure white, entirely free from spots or specks. I have seen some hundreds of the eggs, and I am at a loss to guess what eggs Colonel Tickell can have got hold of when he described (Journal, As. Soc., XVII, 302,) those of this species as " white with rather large spots of deep claret brown, most numerous at the big end."

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* Was this the next species, which I have from Thayet-myo?

In length the eggs vary from 0·65 to 0·75 inch, and in breadth from 0·42 to 0·48 inch; but the average of more than fifty eggs measured was barely 0·71 by 0·46 inch.

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102 *bis.*—*Cypselus infumatus*, *Sclater*.

As yet the Palm-roof Swift (*C. tectorum*, Jerd.) has only been found breeding in the Garro and North Cachar Hills, during the months of March April, and May, at heights of from 2,500 to 4,000 feet above the sea level, The following note was given me by Dr. Jerdon :—

"They attach their nests to the palm leaves used by the people to roof their huts. The roofs consist of two separate layers of leaves, and it is to the upper surface of the lower layer that the nests are attached. These nests resemble closely those of *C. palmarum*, and are tiny little shallow saucers, some 2 inches in diameter, composed of some feathery seed, with here and there a stray feather agglutinated with saliva after the fashion of the genus."

I have never seen the eggs, but Major Godwin Austen tells us that "this little Swift was numerous in the Naga villages around Asalú in March and April, and was then breeding in the roofs of the houses. A nest that I obtained was attached to the upper surface of a kind of palm leaf, in the thatch of a house; it is a neat, very shallow, construction of fluffy grass seed, stuck together with saliva, a feather or two intermingled with the grass. The eggs were two in number, pure white, resting against the lower side of the nest, which is just of sufficient depth to retain them, so that the parent bird can hardly be said to sit on her eggs in the nest, but rather hangs on to it in apparently a most uncomfortable position, and how the young when hatched remain with safety in the nest, it is difficult to understand, unless the power of hanging on by the claws is thus early developed."

103.—*Collocalia unicolor*, *Jerd.*

Mr. Davison tells me that "there are several places on the Nilghiris where the Hill Swiftlet breeds largely; one is a large cave above the main road from Coonoor to Ooty, close to the last toll-bar, before the cantonment of Ooty is reached: another is a cave below the Hooker Chinchona Estate at Pykarra, near the footpath leading from Pykarra to Musnagoodie. The birds build in company, the nests often being placed in regular tiers one above the other, and often so close that they touch each other. The nest is never composed entirely of saliva, but always consists chiefly of a long grey thread-like lichen (so common on all trees on the Nilghiris) firmly agglutinated together with the saliva. The nest is a small shallow, semi-saucer-like structure glued to the rock. The normal number of the eggs appears to be two; they are quite white, very elongated, and are nearly the same thickness at both ends. They breed in April, May, and the early part of June."

The eggs that I possess of this species, all sent from the Nilghiris, are a dull, almost wholly glossless white; as a rule slender elongated ovals, almost cylindrical, and sometimes absolutely cylindrical. At times slightly pyriform, and typically, I think, somewhat compressed just beyond the middle. They vary in length from 0·79 to 0·9 inch, and in breadth from 0·53 to 0·58 inch; but they average 0·83 by 0·54 inch.

Dr. Jerdon makes the following remarks :—In 1846, I paid a visit, in company with Mr. Ward, M. S. C., to Pigeon Island, some miles out at sea to the south of Honore, which was said to be the resort of these birds. We found a large cave at one end of the island with a few of the nests, but of the second-make and inferior to the first, being mixed with feathers and extraneous matter. There were no eggs at this season (the end of December), and we did not see any of the birds to identify the species. A native who had guided us to the cave said if we waited till 8 or 9 o'clock P.M., the birds would come. We instructed him to do so and to catch some of them in a net he had with him for the purpose. It is known to have other breeding places on the Malabar Coast, *viz.*, the Vingorla Rocks, where one hundredweight of nests is said to be produced annually. If so, this must be the largest breeding-spot on the coast. Also the Sacrifice Rock, 20 miles south of Tellicherry; besides, I dare say, others. I visited Sacrifice Rock in March 1849. There is one cave here, which had perhaps fifty to hundred nests, and a few had eggs in them. Very few of the nests were of the first-make, these being annually taken away by some Moplahs from the mainland. The birds were at this time flying about, feeding on the flies which abounded at the edge of the rock. About twenty couples, perhaps, were present, not more. I doubt if all the places I have enumerated on the western coast would contain the nests of a quarter of the number of these Swiftlets, which I have seen at once in one locality; if so, where do the others breed? It has been suggested that they may nestle in inland caves; but all my enquiries have failed to discover any in India. Mr. Layard has, however, visited some caves in Ceylon where they breed, and which he has described in the 12th vol., Ann. and Mag. Nat. Hist., 1853, p. 168."

I have shown recently (Stray Feathers, vol. I., p. 294, et seq.) that Jerdon's *unicolor* is quite distinct from *fuciphaga* Thun., and it is quite certain that on the Nilghiris these no more make edible nests than *linchi* does on the Andamans. I am by no means certain, therefore, what species it is to which Dr. Jerdon refers in the above passage, and I should be much obliged if any of my southern Indian correspondents would procure and furnish me with specimens from the localities indicated by him.

103 *bis.—Collocalia linchi, Horsf.*

Horsfield's Swiftlet breeds abundantly in both the Andamans and Nicobars.

Normally it breeds in caves; indeed in a manuscript note given me with many others by the late lamented Colonel Tytler, I find the following :—" I may note that I was upwards of two years in the Andamans, and never either saw or heard of any species of Collocalia building inside of houses, sheds or the like; these species always build inside caves immediately on the sea-shore."

But since Colonel Tytler left the Andamans, a change has come over the spirit of their dream, and at the Settlement of Port Blair they breed freely inside houses, both on Ross and Chatham Island; the interior of the saw-mills being their most favorite haunt. There is another shed at Viper also in which they breed. This is quite in keeping with our experience of this family elsewhere. Thus Messrs. Coues and Prentniss tell us in their general remarks on the Columbian Avifauna :—

" A total change of habit by civilization, sometimes to be observed, is extremely interesting. There can be no doubt that before the settlement of the country, the *Chætura pelasgia* bred in hollow trees. This habit is now totally lost, the bird finding chimneys better suited to its wants. In like manner, the *Hirundo horreorum* now breeds altogether on the rafters and beams of barns and out-houses, while the *H. lunifrons* is gradually abandoning the sides of cliffs for the convenient situations afforded by the projecting eaves of buildings. The *Progne purpurea* always gives preference to the boxes now everywhere placed for its accommodation."

Again in his notes on the Birds of Jamaica, Mr. March tells us a similar tale of the domestication of *Tachornis phœnicobius*, the local " Palm Swift."

" Previous to 1854, the habitat of the Palm Swift was altogether confined to the palm trees in this district (St. Catherine) and to the cocoanut palms near the coast at Wrach Bay, Healthshire, Port Henderson, and Dowkins Pen, at Passage Fort. In that year a colony of them established themselves on two cocoanut palms in Spanish Town, one near the centre of the town, the other at the north-east corner; and there they remained until, in 1857, the palm at the north-east was taken down, and the other divested of the lower fronds and the Swifts turned adrift. They were then, for the first time, observed flitting about the lower piazzas of the House of Assembly, the upper part of this building having been previously occupied by the *H. fulva*. In a short time these prior occupants were driven out and a considerable colony of Palm Swifts now occupy the lower colonnade."

There has been some grave error in regard to the nests of this, the commonest of the Andaman and Nicobar Collocalias. I myself fully believe it to be *linchi*, (c. f. Stray Feathers, 1873, p. 294, *et seq.*), if not, it must stand as *affinis* Tytler; but in either case it does *not* make any of the edible nests. There is no mistake about this, I have shot the birds and taken the nests out of caves, and Davison has done the same out of buildings where they had never been disturbed, and the nests are in all cases similar; somewhat shallow flat-bottomed, half or two-thirds saucers, composed of brown moss, firmly agglutinated with saliva; only along the line of junction with the place of attachment is there a thickish film of unmixed inspissated saliva, and that is brownish and not white.

The white nests are made by *spodiopygia*, and probably also by *innominata* (c. f. Stray Feathers, *loc. cit.*)

The nests of this species, *linchi* (or if distinct *affinis*), vary in size, but they average about 2½ inches across, stand out from 1½ to 1¾ inch from the rock, or wall, and are about an inch deep. They vary from ⅛ to more than ¼ inch in thickness.

How often they breed I cannot say; but many of the nests which I found in a cave at the little Jolly Boy, Macpherson's Straits, contained fresh eggs on the 9th of March.

The eggs are pure white and entirely devoid of gloss; long ovals, very obtuse at both ends, and some of them almost cylindrical, while others again have a pyriform tendency. The eggs vary greatly in length, *viz.*, from 0·64 to 0·75 inch, but much less so in breadth, *i. e.*, only from 0·42 to 0·46 inch. The average may be taken at 0·7 by 0·45 inch.

I must note here that Captain Beavan is altogether wrong in what he says (Ibis 1867) about this species, and he must have written from hearsay, for his own observations are excessively accurate. He remarks that the nest of this species is considerably smaller and perhaps whiter than that of "*nidifica*" (? *innominata,* nobis), on which account it is more valued by the Burmese, who collect both kinds for the Chinese and Penang markets. He adds that "this species is generally abundant at Port Blair, especially between Aberdeen and Navy Bay, where every cave is full of their nests." Now, in the first place, the nests of this species are brown and mainly composed of moss, and are not, so far as I could learn, ever collected at all. In the second place, there are no caves at all between Aberdeen and Navy Bay.

Mr. Davison has watched these birds making their nests; they bring a tiny piece of moss and cling on to the roof; then for four or five minutes you see the little bird's head going backwards and forwards, and then off he flies, and you see that the piece of moss has been stuck on. They do not seem to be able to stick the moss on to white paint. One pair tried for nearly a week to make a nest on a painted ceiling of a house, and covered the carpet below with scraps of moss, but failed to get a single piece to stick; at last they gave it up as a bad job.

Sometimes four or five will come in together, and all cluster in a lump where the moss is to be stuck, and then a great twittering and skirmishing ensues, till of a sudden, all but one who is left wagging his head over the moss, disappear with a sudden dash.

103 *quat.—Collocalia spodiopygia, Peale.*

Peale's Swiftlet, if I have correctly identified the species (c. f. Stray Feathers, 1873, p. 296), also breeds in several of the Andaman and Nicobar Islands.

As yet it has only been found nesting in caves, though the time may come when like other members of the family it may resort to buildings.

I found the eggs in a cave on Little Button Island of the Andaman Archipelago on the 21st March, but I do not know whether they have a second brood. The nest, except just at its junction with the rock (where it is brownish), is composed of the most exquisitely silvery white gelatine. Exteriorly the surface is compact and somewhat roughened in laminæ; interiorly it is a network of the finest and whitest threads, reminding one of the *Euplectella.* The true nest which is pure white, and in shape rather more than half of a shallow cup, is from 2 to 2¾ inches broad, stands out from 1½ to nearly 2 inches from the wall, and varies interiorly in depth from little more than ½ to a full inch. The attachment films and foundation below the true nest, both of which are brown, vary excessively according to the site chosen for the nest: in some they are almost wanting; in others the film extends for an inch on either side beyond the nest, and the foundation below the most projecting point of the true nest may be 1¼ inches in depth.

The edge of the true nest all round is blunt, like that of an ivory paper-cutter, and the sides gradually increase as they approach the bottom to the thickness of ⅜, or occasionally even ½ inch. Of course the nests vary in outline, as well as in size and depth, but the line of the upper edge is generally more that of a horse-shoe than of a segment of an oval or circle.

I found the nests capriciously dotted about, *par preference* in the darkest corners (nowhere out of reach of the hand, for the cave is low), in places a couple of feet apart, in others a dozen clustered together within a diameter of less than this.

As a rule, each nest was separate and distinct, but in a few cases I found two and even three joined together.

The eggs are, as usual, pure white, more or less cylindrical in shape, devoid of gloss, and slightly larger than those of the preceding species.

104.—*Dendrochelidon coronata, Tick.*

The Indian Crested Swift breeds freely, to my certain knowledge, in the Sub-Himalayan tract, below Kumaon and Gurhwal, in parts of the Mirzapur District, in the Mandla District of the Central Provinces (from which locality Mr. R. Thompson sent me an exquisite little nest), in the Nilghiris (whence also I have received its egg), and Ceylon, and generally, I believe, throughout the warmer parts of India wherever there are extensive forests.

The breeding season is from April to June, the place selected is the bare and therefore generally dead branch of some tall forest tree. It is almost impossible to get the egg (for they lay only one) down unbroken.

I owe a nest of this species to Mr. R. Thompson, who took it on April 6th, 1869, in the district of Mandla, Central Provinces. The nest contained a single egg, which was destroyed by the fall. The nest is a most wonderful little structure. It is a very shallow half-saucer, composed of thin flakes of bark, gummed probably by the bird's own saliva, against the side of a tiny horizontal branch. The nest is nowhere more than $\frac{1}{8}$ inch in thickness, is at most $\frac{1}{2}$ inch deep in the deepest part, and can be exactly covered by a half-crown. The parent bird, though slender, is fully 10 inches in length, and consequently the bird when sitting across the nest and the tiny branch to which it is attached, completely hides the nest, and no one would suspect that there was any nest there at all.

Mr. Thompson at the time wrote to me as follows:—

"*Dendrochelidon coronata* builds a wee bit of a nest with small chips of bark, a few feathers, and all glued together with inspissated saliva. The nest is placed on the side of a horizontal branch, and is entirely filled up with the solitary, rather largish, white oval egg. The bird looks for all the world as if she were resting on the branch, and no amount of looking from underneath would show you that there was a nest under her. The particular nest I send you was placed in a *Boswellia thurifera* tree at about 12 feet from the ground. It is very small and saucer-like, composed of the exfoliated flakes of bark of the tree *(Boswellia thurifera)* mixed with one or two feathers, all cemented together by the inspissated saliva of the bird."

This is strictly in accord with what Dr. Bernstein tells us in Cabanis' Journal for 1859, page 183, in regard to the breeding of the nearly allied *D. klecho.* He says that the nest resembles in form and materials that of *Collocalia,* but is still smaller and flatter. It is a semi-circular structure and is affixed to a small naked horizontal branch high up in a tree, the branch forming the flat side of the nest. The walls, scarcely thicker than parchment, are made of feathers, tree mosses, and bits of bark, cemented together by the viscous saliva of the bird. The nest, which contains a single perfectly oval white egg, is so small that the bird sits upon the branch and covers it with only the end of her abdomen.

About two years ago I found a nest of this species in the Darjeeling Terai in May placed exactly as above described, but both nest and egg were smashed, and the lad who went up for them nearly killed by the bough breaking just before he reached the nest. The egg was very long and pure white, and, as far as I could measure, the fragments nearly 1 inch in length.

I have as yet obtained only one single entire egg of this species, and this I owe to Captain Mitchell of Madras. It is in colour a pure dead spotless white, and in shape a very long almost cylindrical oval, but slightly pointed towards the lesser end.

It measures 0·85 by 0·55 inch, and is much smaller than the one I saw.

106.—*Otothrix Hodgsoni, Gray.*

Mr. Hodgson figures a young bird of the Sikhim Frog-mouth seated on a broad pad-like nest of moss and lichen, placed on a horizontal bough of a tree close to its junction with the trunk. He notes on the reverse of the plate that the female with young and nest were obtained on the 20th May 1856, behind Darjeeling, towards the great Runjeet at an elevation of between 3,000 and 4,000 feet; he adds, "young like adult, but duller hues; nest nearly flat; a soft mass of lichen and moss overlaid with a soft downy vegetable substance blended into a felt-like mass."

107.—*Caprimulgus indicus, Lath.*

Widely distributed as is the Jungle Night Jar, I have as yet only authentic eggs of it taken in April in the Central Provinces by Mr. F. R. Blewitt, and below Mussourie in May by Captain Hutton. These birds lay only two eggs and make no nest, but lay in a slight depression of the ground, under some low bush.

The eggs sent me by the above-named gentlemen are undistinguishable from some of those of *Kelaarti* sent me from the Nilghiris and from Raepore. I have never taken any eggs of this species myself, and, indeed, I am, for the most part, dependent, so far as the eggs of the *Camprimulgidæ* go, on correspondents. I have never accepted eggs unless sent me along with skins of the birds to which they were said to belong; yet, notwithstanding this, I confess that I am far from certain that no mistake has in any case occurred. In regard to the present species I may mention I have as yet only four eggs, all very much of the same type and size. They are long ovals, somewhat cylindrical, and one of them slightly pyriform. The shell is fine and has a fair amount of gloss. The ground colour is a pale salmon-pink, in one egg slightly paler and more creamy. They are pretty thickly but irregularly blotched and streaked with pale-brown; in one egg a purplish, in the others more of an olive brown, and also with faint underlying spots and clouds of more or less pale inky purple.

They vary from 1·15 to 1·25 inch in length, and from 0·86 to 0·9 inch, the longest egg being the narrowest, and the shortest, the broadest.

110 bis.—*Caprimulgus andamanicus, Hume.*

This species was described, *Stray Feathers* 1873, p. 470.

I myself only once met with the Andaman Night Jar, of which we shot a single specimen, a male, on Jolly Boys, an island in Macpherson's Straits, at the south of the South Andaman.

Mr. Davison remarks: "I myself never saw this species in the vicinity of Port Blair, though I frequently heard its note of tok, tok, tok, during the night, but on a small island near Stewart Sound, between North and Middle Andaman, I saw a pair of them; they rose off the ground, flew low for a few yards, and then squatted, always placing a bush or stone between them and me. I followed them about for some time, but although I got a couple of snap shots, I failed to secure a specimen. At Port Mouat, on the 12th April, one of my men shot a female as she flew off her nest; the eggs, two in number, were laid at the base of a stone in a slight natural depression among the dead leaves, some distance in the jungle. I did not see or even hear the note of any *Caprimulgus* on any of the islands of the Nicobar Group."

The eggs are the most beautiful Goat-sucker's eggs I have ever seen, and differ from those of any other Indian species with which I am acquainted. In shape they are very regular ovals. One of them only slightly cylindrical.

The ground colour is a delicate pale salmon pink, and they are mottled and streaked, and ornamented with zig-zag and hieroglyphic-like lines of a darker and somewhat purplish pink. They measure 1·07 and 1·13, in length, and 0·85 in width.

108.—*Caprimulgus Kelaarti, Blyth.*

This supposed species, the so-called Nilghiri Night Jar breeds throughout Southern India and the more wooded portions of the Central Provinces from the latter end of February to August. In the Nilghiris March seems the favourite month, in the Ghâts of the Central Provinces April, but Mr. Blewitt took them in Raepore as late as August. Mr. Davison tells me that this species "breeds on the Nilghiris in the latter end of February and the earlier part of March. There is no pretence whatever of a nest, the eggs being merely placed in some slight natural depression under a bush or tuft of grass. Occasionally a rather strange situation is chosen for the eggs; and they are laid in the centre of some small heap of ashes produced by the *Burgas* (*Badagas*) burning weeds in their fields. The eggs are two in number, of a fine salmon coloured ground, marbled with a purplish brown, which is very much toned down, appearing as if beneath the surface of the shell." Miss Cockburn, writing from Kotaghery, remarks: "This Night Jar never builds a nest, but lays her eggs (generally two in number) on the bare ground, and occasionally on a rock, where there is not the slightest appearance of anything resembling a bush to shade the bird from the scorching rays of the sun while engaged in the work of incubation. She evidently prefers heat, and for this purpose chooses very warm localities. This bird is often contented with only *one* egg, which it is supposed to have the instinct to remove to another place, if looked at frequently by man. The business of hatching is apparently left entirely to the female, as she alone is seen near the eggs. The Night Jar's eggs are found in the months of February, March, and April. Some of them are perfectly oval, others are thicker at one end than the other. I know of no bird's eggs whose colours fade so very much if kept after being blown. When first taken, the prevailing hue is a beautiful salmon colour with large blotches of a darker shade. But in a short time they loose their freshness."

Mr. R. Thompson says:—

"This Night Jar is found over all the well-wooded Ghâts of the Central Provinces. I found the eggs in April, two in each case, laid on the bare ground under a bush; the hen when flushed usually flew straight up into a tree. The eggs were fleshy-white, blotched with purplish pink spots. Although a good deal smaller, they were of the same shape as those of *C. albonotatus.*"

Some of the eggs of this species which have been sent me from the Nilghiris by Miss Cockburn, Mr. Carter, and Mr. Davison, and likewise from Raepore by Mr. F. R. Blewitt, agree precisely with the eggs of *indicus* already described, but one has a much brighter salmon-pink ground, and has both the primary purplish-brown and the secondary paler purple markings much better defined, and brighter, and again three or four of the eggs have more of a creamy tinge on the ground colour, and have both the brown and the pale purple markings very faint and cloudy. As regards size, shape, and gloss, these eggs are much the same all through. I do not myself believe that *Kelaarti,* as obtained in Southern India at any rate, and *indicus,* are really specifically distinct, and hence I am not surprised to find that the eggs attributed to both races are practically identical.

The eggs of which I have a large series vary from 1·08 to 1·23 inch in length, and from 0·8 to 0·9 inch in breadth, but the average is 1·15 by 0·86 inch.

109.—*Caprimulgus albonotatus, Tick.*

The Large Bengal Night Jar breeds from March to May pretty well all over the better-wooded portions of Continental India, but most plentifully in the low warm valleys of the Sub-Himalayan ranges.

Like the rest of the family it makes no nest, and lays two eggs upon the bare ground, as a rule in some sheltered situation.

Mr. R. Thompson writes: "The birds begin pairing as early as March, when they are very noisy and restless, flitting about from place to place attracted by each new call of a rival bird of either sex, a call which may be either one of love or defiance.

"The eggs, always two in number, and of a salmon colour, blotched with pink and brown, are laid on the bare ground under shelter of a bush, stump or stone.

"The eggs are long, almost cylindrical, both ends being of the same size. About the end of May the young birds are hatched, covered with down, and are quite helpless and unable to shift their position until able to fly—a power which is quickly given them, the rapidity of their growth being commensurate with their utterly helpless and exposed condition whilst nestling on the bare ground.

"This and *C. asiaticus* are common to all the lower warm valleys of the Sub-Himalayas. I have found sometimes three and four nests within a small space of jungle (often the dry bed of a watercourse), the shelter of a high bank, or in a coppice of young trees. Though quarrelsome and restless when pairing, after that they appear to sober down and many live together in near proximity. They show a peculiar fondness for certain localities, where large numbers will be found, whilst in other places, quite as favorable as it would appear to us, not a bird will be met with."

Colonel Tickell, who seems to have possessed the remarkable faculty not shared by ordinary mortals of discriminating the sexes of eggs, said long ago of this species: "Makes no nest; eggs laid on the bare ground in bush jungle in general two; shape blunt, and both ends nearly equal; male egg $1\frac{7}{32}$ by $\frac{15}{16}$ inch, pale fleshy clay colour, sprinkled with patches of darker brownish-red; female egg $1\frac{3}{16}$ by $\frac{7}{8}$ inch, paler and redder."

"Of this species," remarks Captain Hutton, "which is a summer visitant at Mussoorie, I took two eggs, at an elevation of 5,000 feet, on the 19th April, from the bare ground, beneath bushes on the side of a hill, the colour being a rich cream-white, with darker blotches of reddish-brown or clay colour; of one the diameter was $1\frac{1}{4}$ by $\frac{7}{8}$ inch, the other was somewhat smaller," and Captain Beavan tells us that "in Maunbhoom, where it is more frequently heard at night than seen, I have procured the eggs at the end of March or beginning of April; they are as described by Captain Hutton."

The eggs of this species are, as a rule, much paler than those of any other Indian species with which I am acquainted.

Some specimens that I possess of this bird's eggs I owe to Captain Hutton, who vouches for their authenticity. They are long, slightly cylindrical ovals, apparently somewhat smaller than those of *C. europæus*. The ground colour is a pale creamy or yellowish stone colour, and they are streaked or blotched with very pale yellowish and purplish-brown. Many of Captain Hutton's eggs have, he informs me, faded since they were collected, so that the above description may scarcely represent the colour of the fresh egg. Other specimens received from Captain Hutton and elsewhere, said to belong to this species, resemble in shape and size those already described, but the ground colour is almost a China-white, and the markings, which resemble those of the eggs first described in character and shape, are mostly a pale lilac, intermingled with some brown, and altogether, though paler eggs, remind one very much of the European Goat-sucker's egg.

These eggs, if, as I have no reason to doubt, they really belong to *albonotatus*, differ *in toto* from all the other Indian Goat-sucker's eggs that I have seen in their almost purely white ground, with only the faintest possible lilac tinge; they also average considerably larger than those of the foregoing species.

But the eggs are not always of this pale type. I have seen a pair taken by Captain Cock at Dhurumsala which are a beautiful delicate salmon-pink marbled cloudily over with pale purplish-brown, part of the markings appearing as if below the surface of the eggs.

Captain G. F. L. Marshall tells me that he "found a nest of *C. albonotatus*, at Bheem Tal, at an elevation of about 4,000 feet above the sea. There were a good many of the birds about keeping in some small tree jungle on the north side of a small hill. I only found one egg, (shooting the parent bird from off it, after watching for about half an hour), and it was laid on the bare ground in a little cleared spot among dead leaves at the root of a shrub and at the foot of a low bank, which, between them, completely shaded it. The egg was a pale salmon colour, clouded with a darker shade of the same hue; it was of the same cloudy type as eggs of *C. asiaticus*, and not boldly streaked like those of *C. Unwini*, Hume, or *C. europæus*."

In length these eggs vary from 1·08 to 1·3 inch, and in breadth from 0·85 to 0·95 inch, but the average of a large series is 1·2 by 0·89 inch.

111.—*Caprimulgus spilocircus*, *Gray*.

Two eggs sent me with an undoubted skin of the Ghat Night Jar from the Nilghiris by Miss Cockburn are more elongated ovals than those of any of the other species. They have the usual gloss, have a pale somewhat creamy-pink ground, and are very faintly streaked and mottled over almost their entire surface with the palest possible reddish-brown and purple. They are decidedly smaller than those of the preceding species, and I think quite as small, and, on the whole, more elongated than those of *asiaticus*.

They were taken on the 10th May near Kotagherry, and measure 1·13 by 0·72 inch and 1·01 by 0·74 inch respectively.

112.—*Caprimulgus asiaticus*, *Lath.*

The Common Indian Night Jar, as Jerdon calls it, (though I should say that it was less common than either *indicus* or *monticolus*,) breeds pretty well throughout the plains of Continental India, ascending in the spring and summer the lower ranges of the Himalayas to the height of 5,000 or 6,000 feet. April and May are the chief breeding months, but I have taken the eggs in July, and so has Mr. F. R. Blewitt, both at Saugor and Raepore.

Mr. R. Thompson writes:—

" Breed in May. They are less choice in their selection of ground for laying their eggs on. I have found their eggs, two in number, in a quite unsheltered spot in the middle of a dry pebbly *nullah*. At another time a large open spot under a large tree, and sometimes at the base of a dead wall.

" The eggs are long cylindrical and equal at both ends. The color a deep salmon, with bright pink blotches intermixed slightly with earthy-brown. The eggs are about one-third smaller in size than those of *C. albonotatus*."

Writing from Dhurumsala, Captain Cock says:—

" Found a nest on the ground with two eggs; had watched the bird near the place for some days before, and one day saw it fly up near a bank in a thick dark piece of jungle. Searched about, and in a depression of the ground among some dead oak leaves found the eggs; they were both the same shape, but varied very much in size. The bird does not remain with us during the winter, but comes up about April and departs about August; may often be seen in the evening perched on a dead bough on the top of an oak; in the daytime always found on the ground."

The eggs are long somewhat cylindrical ovals, slightly pointed towards one end, with a ground colour varying from a pinkish stone colour to a deep salmon pink, blotched, clouded, spotted and streaked with different shades of pale-reddish and purplish-brown, with faint underlying inky purple clouds and spots. The eggs vary somewhat in size, but the largest are scarcely half the dimensions of those of the European Night Jar, and they average much smaller than any of our Indian Goat-suckers but *spilocircus*. The colouring of these eggs reminds one forcibly of some of the varieties of the eggs of the Hill King Crow, *D. himalayensis* (Tytler), vel., *D. Waldeni* (Beavan); the eggs have been obtained by several of my contributors in different parts of India, and little doubt can be entertained either as to their authenticity or as to the normal type of colouration in this species being that above described. The eggs have a faint gloss. The eggs of this species are perhaps, as a rule, more brightly salmon-coloured than those of any other of our Indian species with which I am acquainted.

In length they vary from 0·98 to 1·09 inch, and in breadth from 0·73 to 0·83 inch, but the average is about 1·04 by 0·77 inch.

114.—*Caprimulgus monticolus, Frank.*

Franklin's Night Jar breeds from April to August, according to locality, throughout the lower ranges of the Himalayas, the Sub-Himalayan forest and jungle tracts, and forest and hilly regions of the Central Provinces and other parts of India.

It lays normally two eggs (at times a single one, hard-set, may be met with) on the bare ground, as a rule, in some shaded spot, where it can be concealed.

The eggs are of the usual type of our Indian Goat-suckers, long cylindrical ovals, varying a good deal in size, but little in shape. They have a fine gloss, more so, I think, than those of most of our Indian Goat-suckers. The ground colour is, I think, as a rule, a delicate cream colour, slightly tinged with pink, spotted, and thinly blotched with very pale purple and pale brown. I have never taken these eggs myself, and cannot, therefore, in every case be as certain as I should wish of their authenticity.

An egg, however, received from Mr. Blewitt from Raepore, differs *toto cœlo* from those above described, at least so far as colouring is concerned. It has a rich salmon-pink ground, richer and deeper than that of any other Goat-sucker's egg that I possess, and is pretty thickly clouded and streaked with only slightly-brownish red.

Dr. Jerdon says:—

"I have found the eggs of this species; they are like those of *C. asiaticus*, but larger and with less of the salmon hue, more of a stone colour, and with very pale clay-brown blotches."

The eggs I have vary from 1·1 to 1·22 inch in length, and from 0·8 to 0·85 inch in breadth, but I have not a sufficient series to make sure that these limits are not exceeded.

114 *bis.*—*Caprimulgus Unwini, Hume.*

I described this species, Unwin's Night Jar, in the Ibis for 1871, p. 406. I had then only two specimens; several have since been procured in the far north-west. Captain Marshall, writing from Murree, says: "We found three nests of this bird on the bare ground in the valleys; the eggs are perfect ovals, greyish white, covered with differently shaded blackish blotches, being 1·15 long and ·8 inch broad. Breeds in May, about 5,000 feet up."

The egg sent me by Captain Marshall is a very perfect oval, only slightly elongated. The shell is very fine and compact, but it has very little gloss; although a considerably shorter and less elongated egg, it more closely resembles those of *C. europæus*, Lin. than any of our Indian Goat-suckers—I mean so far as coloration goes. The ground colour is creamy-white, and it is boldly, but somewhat sparsely and very irregularly blotched with sepia brown, while, besides these blotches, the egg is pretty thickly blotched, streaked, and clouded with pale inky-purple, which seems to underlie entirely the primary brown blotches, and in places are so faint as to have the appearance of lying below the surface of the shell.

This egg measures 1·13 by 0·85 inch.

116.—*Harpactes Hodgsoni, Gould.*

Dr. Jerdon has the following remarks on the nidification of Hodgson's Trogon :—" I had the eggs of this Trogon brought to me at Darjeeling. They were said to have been taken from a hole in a tree; they were two in number, white, and somewhat round. There was no nest, it was stated, only some soft scraping of decayed wood."

Mr. Hodgson notes that " this species begins to lay in April, the young being ready to fly in June or July; they scoop a hole out in a decayed tree, digging down about 7 or 8 inches. The eggs, three or four in number, are pure white, moderately broad ovals, slightly pointed towards one end, and measure about 1·25 by 0·87 inch. They breed only once a year; both male and female assist in rearing the young; as a rule, this species only breeds in the lowest forest-clad hills, and the forests of the terai."

117.—*Merops viridis, Lin.*

The Common Indian Bee-eater breeds pretty well all over India and Burmah, though less commonly in damp low-lying localities, such as Orissa and Eastern Bengal. It lays from three to five eggs during the latter half of March, in April, May, and even the first week of June. It breeds *par preference* in sandy banks or cliffs, but I have found its nest in an old mud wall, and again once close to Ahmedabad in Guzerat in a perfectly level nearly barren plain. Mr. Adam, whose experience had then lain chiefly in the North-Western Provinces and Oudh, formerly remarked: " This species breeds about the end of March, April, and May; they build in holes in the ground, generally prefering the perpendicular face of a nullah, cutting or embankment, although I have sometimes found them making use of a knoll which kept the opening of the nest above the surface water which might collect on the surrounding ground. I have often watched them digging out the earth with their bills, when they commenced their nests, and scraping it away with their claws. I have always seen them commence a fresh excavation and never known them to make use of an old hole. The opening of the nest is circular, about 1¾ inch diameter and cleanly cut. The length of the passage varies from 1½ foot to 5 feet, and it increases in width from the entrance to the egg cavity, which is about 3½ inches in width. From the entrance, to the nest, the passage usually declines at an angle of about 30°. The excavation is carried on very quickly, and when a piece of stone or kunkur impedes the straight line a detour is made, and the excavation carried on until a sufficient depth is reached. The eggs are laid on the bare ground. Five is the greatest number I have found in one nest, but three or four are the common numbers. In one or two instances the eggs taken from the same nest have presented very different degrees of incubation."

Later, writing from Sambhur after some years' residence in Rajpootana, he tells us: "This bird commences to build here towards the end of March. Although, as a rule, it prefers to build in a bank, I have taken its nest on level ground. The nest is generally about 3 feet deep. I have seen them nearly 6 feet, and the egg cavity is a long oval with the major axis about 5 or 6 inches; it is without any lining; the angle of the decline from the opening to the nest is about 30°. In some nests which I have dug out, a piece of kunkur or stone has caused the bird to diverge at right angles from the straight line, and then follow the same angle until a sufficient depth has been reached. I have found as many as seven eggs in one nest, although four or five is the normal number, and I have repeatedly found the young birds in the most various stages of plumage, *i.e.*, one all but fledged, and the youngest covered with down. On several occasions I have found frogs occupying the egg eavity of these nests."

Mr. Davison remarks:—

"Dr. Jerdon, writing of this species (B. I., page 205,) says that it does not ascend mountains, to any height at least; but the bird is very common at Kulhutty on the Nilghiris, about 5,500 feet above the sea; in fact I have taken the eggs from the roadside just above the dâk bungalow at the above-mentioned place, and I have shot the bird in the Neddivuttum Chinchona Plantations, about 6,000 feet above the sea. My experience is that it ascends the hills somewhat higher than *M. quinticolor*, and certainly breeds at a higher elevation than the last-named species. With us on the Nilghiris it breeds at the same time as *M. quinticolor*—that is to say, in March and April—and in the same situations; often the nests of both species may be found side by side. I have noticed that this bird appears to lay its eggs with intervals of several days between each, for I have taken out of the nest a perfectly fresh egg and, one a good deal incubated, and I have found in another nest four young ones, the youngest apparently only a couple or three days old, and the oldest more than half-fledged. I have not found this the case with *M. quinticolor*. I, on one occasion, took six eggs from a nest of this species, but generally the number appears to be four or five. In digging out these nests, instead of finding eggs, the chamber often turns out to be occupied, by mole-crickets, spiders or toads, and occasionally by snakes. In this species the tunnel varies from about 18 inches to 4 feet in depth, and the chamber is about 4 inches in diameter. The eggs are laid on the bare ground; there is no attempt at any nest."

The eggs—little polished alabaster balls—are alone sufficient to show how close are the affinities, despite external differences of form, between the *Meropidæ, Halcyonidæ* and *Coracidæ*. In size the eggs of the various species of these families differ no doubt, but in every other respect they seem to me identical. The eggs of *viridis*, like those of all its affines, are nearly spherical in shape, milky-white in hue and brilliantly glossy. They are small, I think, for the size of the bird, being considerably less than those of *Alcedo ispida*, which they closely resemble. Occasionally, a somewhat oval or pyriform egg is met with, but, as a rule, they are the most truly spherical eggs I know of.

They vary in length from 0·68 to 0·82 inch, and in breadth from 0·64 to 0·73 inch, but the average of a very large series is 0·78 by 0·7 inch.

118.—*Merops philippinus, Lin.*

The Blue-tailed Bee-eater breeds from March to June, pretty well all over Continental India, in well cultivated and open country. Like all the rest of the family it breeds in holes in banks, and lays usually four or five eggs. The holes are rarely less than 4 feet deep, and I have known them to extend to 7 feet. In diameter they vary from 2 to 2½ inches. At the far extremity, a rounded chamber, as a rule not less than 6 inches in diameter, is hollowed out for the eggs, and at times this chamber has a thin lining of grass and feathers, which I have never yet met with in the nests of the other species.

Mr. E. C. Nunn, writing from Hoshungabad, says: "I found nests of this species in the banks of the Nerbudda on the 1st April. They consisted of fine grass roots and feathers loosely placed at the end of a long hole, some 2 or 3 inches in diameter and perhaps 4 feet deep, which the birds had excavated in a high earthen bank. A month later I found the nest of *M. viridis* in a very similar situation."

Captain C. H. T. Marshall remarks: "The nests were in large numbers, about 30 or 40 in the sides of mounds, that were old brick-kilns in the station (Lahore). They were holes dug in the earth at heights varying from 4 to 9 feet, and ran about 6 inches further in than a man's arm could reach. There was no lining to the egg chamber, only a few feathers, nothing else. The eggs were four in number in each nest, nearly round, clear, shining, pinky-white. I found three sets of these nests. The birds lay in June and the young come out in July; the old birds were very pertinacious, hovering round my head when I was digging out the nests. There are large numbers of these birds all the hot weather about Lahore; they go away, apparently, in the cold weather, or at most very few remain."

Mr. F. R. Blewitt from Raipoor writes: "The eggs were secured in the high sandy banks of the Mahanuddee. The holes burrowed by the birds in the somewhat loose sand of the bank were from 5 to 7 feet deep, and largely rounded out at the far end into a chamber the size of a large saucer. The eggs were laid on the bare sand. This was in May, and all were quite fresh. Five was the maximum number found in any hole. *M. viridis* here, at any rate, breeds a month earlier, since all the nests of this latter species that I examined at the same time contained young ones."

From Kumaon Mr. R. Thompson tells us that "this, too, is a common breeder in certain localities. At Nujjeebabad around and about the Pethoragurh Fort numbers breed. I have seen them breed in the hot valleys of the Himalayas far in the interior. But it is not a forest bird, keeping well out in the cultivated and open parts."

Mr. Adam says: "Breeds in March and April. The structure of the nest is similar to that of *M. viridis*. I found them building on the bank of a small stream near Baraich, and I have also seen their nests a good distance from the stream. Four is the greatest number of eggs I have found in one nest; on two occasions I found three. On one occasion a bird-catcher brought me an egg of this bird and asked me if I quite believed in its authenticity, because if I did not he would convince me. He then produced a bird, and with a jerk of his thumb forced an egg from the bird exactly like the one he had given me."

Mr. Brooks tells me that "this bird breeds near Digheea on the Ganges, between Allahabad and Mirzapore, and about 10 miles below the junction of the Ganges and Tonse Rivers. Also in the cliffs below the Government Gardens at Mirzapore close to the Dâk Bungalow. I failed to get the eggs, the holes were so deep, 6 and 7 feet I think. These birds breed in company with *A. ginginianus*."

One year I found a colony of these Bee-eaters established in a small sandy cutting at the Agra Railway Station, where the engines passed twenty times a day within 2 feet of the mouths of the holes.

The eggs are white, highly glossed, and very spherical ovals. They average considerably smaller than those of the European Bee-eater, but otherwise they are perfectly identical with these, and I fancy that it would be impossible to separate small specimens of *apiaster* from large ones of *philippinus*.

In length they vary from 0·82 to 0·97 inch, and in breadth from 0·67 to 0·85 inch, but the average of more than fifty eggs measured was 0·88 by 0·76 inch.

119.—*Merops Swinhoei,*[*] *Hume.*

Mr. Davison gives me the following note on the nidification of the Indian Chestnut-headed Bee-eater: "This bird breeds on the slopes of the Nilghiris during March and April. They bore holes in the sandy parts of banks varying in depth from 3 feet to 6 feet; some are quite straight, others after a depth of a foot or 18 inches, turn off at almost a right angle, and others again take a somewhat circular direction. The tunnel always terminates in a circular chamber, about 6 inches in diameter, which is never lined; the eggs, four to six in number being deposited on the bare and generally somewhat damp floor of the chamber. One favorite breeding locality is the sandy portion of the banks on the Seegore Road, leading from the Nilghiris to Mysore; along 5 or 6 miles of this road the banks are drilled with innumerable holes of both this species and *Merops viridis*, sometimes eight or ten together, at others scattered singly along the sandy portions of the bank. The bird sits very close, and invariably allows itself to be dug out without attempting to escape. The diameter of the tunnel of this species is somewhat larger than that of *M. viridis*; in fact, by looking at the holes (when made in a comparatively stiff soil), it is easy to tell which of them pertain to which species.

"I found these birds only commencing to make their holes about the middle of April at the Andamans, although the birds had been seen in pairs since the latter end of March."

Layard has described the breeding of this species in Ceylon, Ann. Mag. N. H., 1853, XII, p. 174.

Mr. W. Theobald has the following remarks on its nidification in Mergui:—"Lays in the 3rd week of March. Eggs 5 or 6 in number, pointed oval. Size 0·84 inch by 0·79 inch, colour pure white, gallery from 1 to 7 feet in length, in soft sandy soil near water. It enters the ground at a small angle and then runs horizontally."

I found this bird breeding at the close of April in a nullah near the Ganges in the Eastern Doon, which in those days was one vast forest. There was a colony of about a dozen pairs, and the only nest I opened was about 4 feet deep, and contained 4 eggs.

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[*] *Quinticolor*, Vieill., is, as Swinhoe has shown, a different bird; Vieillot's name applies to the Javan bird. Brisson's name, *erythrocephalus*, cannot, as Lord Walden has shown (Ibis, 1873, p. 301), be accepted. The bird must have some name, so I propose the above for our Indian species.

These eggs are of the usual Bee-eater type, pure white, very glossy, almost spherical. They are smaller than those of *philippinus* and *a fortiori* than those of *apiaster*, but they are considerably larger than those of *viridis*.

They vary in length from 0·82 to 0·92 inch, and in breadth from 0·72 to 0·81 inch, but the average of a large series is 0·87 by 0·76 inch.

120.—*Merops ægyptius, Forsk.*

Mr. Adam writes: "The Egyptian Bee-eater occurs close to Sambhur, and in the Marot hills the natives showed me the holes in which it breeds about the beginning of the rains. I have not yet obtained the eggs."

121.—*Merops apiaster, L.*

The European Bee-eater, so far as I am aware, breeds nowhere within our limits, save only in Cashmere. There it nests abundantly during May and June, laying from 4 to even 7 eggs; the nests are similar and similarly situated to those of the species' already noticed, but they are usually in close proximity to water. The chamber is comparatively large, and at times (to judge from the sample sent me) has a good deal of feather and grass lining.

The eggs vary very much both in size and shape; some are not bigger than many eggs of *M. philippinus*, others are *very* considerably larger. Some are nearly spherical, others long, broad, obtuse-ended ovals; all are of course pure white, and most of them have a very fine gloss.

In size they vary from 0·95 to 1·13 inch in length, and from 0·87 to 0·94 inch in breadth, but they average 1·08 by 0·9 inch.

122.—*Nyctiornis Athertoni, Jard & Selb.*

Mr. R. Thompson informs me that the Blue-ruffed Bee-eater breeds in holes in trees in April and May in the Sub-Himalayan forests of the Kumaon Terai. I have never obtained or seen the eggs.

123.—*Coracias indica, Lin.*

Both Layard's and Tickell's accounts of the nidification of the Indian Roller are nonsense: one says the eggs are full deep Antwerp blue; the other that they are greenish, profusely speckled with dark brown spots; of course they are really pure, glossy white. They *could not* in the first place be anything else, and I have taken scores myself, and so have Messrs. Brooks, Blewitt, Hutton, Thompson, Adam, Cock, and a dozen others, and no one ever yet saw this species lay anything but a white egg. They lay from the end of March right into July, but in Upper India the great majority of the birds lay in April and June.

They build in holes in trees, in old walls, in roofs, or under the eaves of bungalows; they sometimes make a good deal of a nest, of feathers, grass, &c., especially where the site they chose is not well closed in, but where they build in a small-mouthed hole there is usually a very scanty lining. I *have* found a nest in a large nitch in an old wall, in which the birds had contracted the entrance with masses of tow, vegetable fibre, and old rags, but this is quite exceptional, and again I have taken the eggs from a hole in a Siris tree, in which there was not the smallest lining beyond a few fragments of decayed wood. I have never found more than five eggs in any nest, and four I take to be the normal number.

Mr. F. R. Blewitt says: "I do not know exactly how long they continue breeding, but I have found the eggs in May, June, and a part of July. The nest is built in holes of trees and old walls of buildings; occasionally the Roller even breeds in the roofs of houses (as witnessed by me at Sultanpore). I have personally searched but two nests; the one, in the hole of a tree, had a very peculiar grain-like substance of a deep chocolate colour, on which the eggs were deposited. The other, in a hole in an old wall, had some coarse and fine grass with feathers of sorts for the eggs to rest on.

"The regular number of eggs is four. In colour they are white, without any trace of spots, and their average length is 1·3 inch, breadth 1·1 inch. In shape they are oval."

Mr. R. M. Adam remarks that in the neighbourhood of the Sambhur Lake this species is "very common. I have taken its eggs during March, April, and May. On the 24th April I saw a pair making love near the Sambhur Fort, and on the 1st May I obtained the eggs of the same birds from a cavity in a neem tree; one of the eggs was a little set. Breeds in Oudh during April. On the 19th April I had five eggs brought from one nest."

The eggs are a very broad oval, in some instances almost spherical, and, like those of the Bee-eaters, they are of the purest China-white and highly glossy. In appearance the eggs are precisely similar to those of *C. garrula,* but no egg in my collection is either quite as large or quite as spherical as the figure of *C. garrula's* egg figured by Hewitson.

They vary in length from 1·25 to 1·35 inch, and in breadth from 0·97 to 1·12 inch, but I find the average of a large series of measurements to be 1·3 by 1·06 inch.

125.—*Coracias garrula, Lin.*

The European Roller, so far as I yet know, breeds (within our limits) only in Cashmere.

It lays from May to July, making, as a rule, a scanty nest in hollow trees, in sandy banks (specially of rivers and nullahs), and, though more rarely, occasionally in ruins.

Six is, I believe, the largest number of eggs that it lays, but, according to my collectors, from four to five is the common number.

The eggs that I possess, and have seen, of this species were all from Cashmere, and were long, very blunt-ended ovals, a good deal compressed towards one end. They are larger and very much more elongated than those of *Coracias indica.* They are, as a rule, pure white and glossy, freshly laid ones having often a superb gloss; but some of them, owing to differences in the texture of the shell, I fancy, appear to be slightly mottled with a grayer white.

They vary in length from 1·48 to 1·56 inch, and in breadth from 1·06 to 1·16; a dozen eggs average 1·52 by 1·1 inch.

126.—*Eurystomus orientalis, L.*

Mr. R. Thompson, writing from the Terai below Kumaon, says: "In April the Broad-billed Rollers arrive, begin to breed in May, and finally leave the forests in July and August. They breed in holes in the higher branches (never less than 50 feet from the ground) of the loftiest Sâl trees. They extend from the Sardah to the Ganges, but particularly abound in the Kotree Doon, where they breed in company with *Eulabes intermedia* in the dense and lofty Sâl forests, to which they are strictly confined."

127.—*Pelargopsis gurial, Pearson.*

Mr. R. Thompson says that this species, the Indian Stork-billed Kingfisher, breeds from April to June, laying in a deep hole excavated by the birds in banks of streams and rivers. He adds: "I found in May 1867 a nest containing five young ones. Near the inhabited nest were seven others, all deserted, and from the débris and marks left, each evidently had served its turn as a breeding place and had been discarded for a fresh one the following year. Found on all minor clear running streams of the Lower Himalayas."

Mr. W. Theobald makes the following remarks on the breeding of this bird in Monghyr:—

"Lays in the fourth week of June. Eggs four in number, round, with some minor combinations; size 1·09 by 1·02 inch; colour pure white; gallery, 1 foot in depth, in a steep bank, in jungle."

129.—*Halcyon smyrnensis, Lin.*

The White-breasted Kingfisher breeds all over the country from March to July. It lays from four to seven eggs, five being the normal number, in a hole which it excavates for itself, and which varies in length from little over 1 to more than 3 feet, although, as a rule, it does not exceed a couple. This hole is from 2½ to 3 inches in diameter, and terminates in a chamber some 4 inches in height and 8 in diameter. I have never found any nest, so to speak, but both the passage and chamber often contain remains of frogs, mole-crickets, and the like.

The nest holes are commonly pierced in banks of tanks and canals, or streams, or pretty high up in cliffs overlooking rivers, but the interior of wells is not at all an uncommon situation, and in Rajpootana I had six eggs brought up to me from a nest hole situated nearly 100 feet below the surface of the country! The reason for the birds going to such an extraordinary depth appeared to be that the upper 90 odd feet passed through very loose soil, where the well was lined with masonry, and it had to go below this to pierce a hole. I have also taken the nest (and here the hole was barely 18 inches deep) out of the mud bastion of an old native fort, some 20 feet above the level of the water in the moat, and again in an old mud wall of a deserted house far away in the jungle.

Mr. W. Theobald makes the following remarks on the breeding of this bird in Mergui: "Lays in the fourth week of March; eggs five in number; blunt oval; size 1·20 by 1·03 inch; colour pure white; gallery 1½ foot, in a stiff bank near a road."

Mr. W. Blewitt writes: "I took the eggs of this bird in the neighbourhood of Hansie on the 28th of June and 4th and 18th of July. They were laid in holes excavated in the canal bank without any lining or nest. In one nest hole I found three, in each of the others four eggs, and one of the latter sets were fully incubated."

Captain G. F. L. Marshall, then at Saharunpoor, sent me the following note:— "The eggs are laid in the latter half of April and the beginning of May; the young are hatched towards the end of May. Domestic arrangements are commenced early in April.

"The eggs are laid in holes in the ground. All that I have taken have been without exception out of the perpendicular banks of the canal. The hole is about 3 inches in diameter at the orifice, and generally slopes upwards; it seldom goes more than two and a half feet into the bank, and often not more than 15 inches; the egg receptacle is merely a hollow in the earth, where the hole terminates, and has no lining of any description; it is about 9 inches wide.

"The eggs, sometimes four, generally five, in number, are of a shining polished white without spot."

Writing from the Sambhur Lake, Mr. R. M. Adam tells us: "The White-breasted Kingfisher is very common, and breeds in the banks of the open wells from March till June. On the 15th April, I took a nest 4 feet below the ground level, and 3 feet deep, in which I found two fresh eggs. On the 13th June, I took another nest in which I found five eggs, all hard-set; the nest was about 18 inches deep. On the 27th June, I took a nest with four fresh eggs. The unblown eggs were pinkish with whitish streaks. In no case had the egg cavity any lining."

Captain Burgess records that "this Kingfisher is one of the most common of its tribe in the Deccan, frequenting almost every stream and nullah. It breeds during the month of May, in holes of the banks of rivers, laying as many as seven eggs, of a beautiful pinky tinge, owing to the colour of the yolk showing through the thin delicate shell." From Ceylon Mr. Layard notes (but this, like most of his notes on nidification, requires verification) "that the nest of this species is found in decaying trees; the parent bird deposits two white eggs (axis 15 lines, diameter 13 lines), beautifully smooth and shining. I have procured eggs in the north of the island in *December*, in the south in April."

Typically, the eggs of this species like those of its congeners are very spherical, and one or two specimens that I possess are almost absolutely perfect spheres, but here and there a very broad oval takes the place of the sphere. The eggs of course are pure white, often more or less discoloured as incubation proceeds, and adorned, when fresh, with a beautiful gloss similar to that observable on the eggs of Rollers and Bee-eaters. Unlike the eggs of these species, however, the Kingfishers rapidly lose their gloss, and, as a rule, long before the eggs are ready to hatch off, they have entirely lost that brilliantly polished appearance which distinguishes them when freshly laid. In size the eggs vary greatly; the smallest specimen in my collection is exactly the same size as Hewitson's figure of the European Bee-eaters, while the largest is but little smaller than the figure immediately below this latter of the European Roller's egg. Of course, as a rule, these eggs are smaller and rounder than those of the Indian Roller; but I have one egg taken by Captain Marshall, R. E., with his own hands, as big, if not bigger as any Roller's egg,—a surprising fact, considering the relative sizes of the two birds.

In length they vary from 1·05 to 1·27 inch, and in breadth from 0·97 to 1·12 inch, but the average of a large series is 1·12 by 1·03 inch.

132 *bis.—Halcyon occipitalis, Blyth.*

Mr. Davison says: "I found the Nicobar Kingfisher (in the Nicobars of course, to which it is restricted,) commencing to breed about the latter end of February, but the only egg I obtained was taken from the oviduct of a female which I shot on the 24th of February just as it was entering its nest; the egg was perfect, and would no doubt have been laid in a few minutes. I found three nests on the Island of Camorta, and all of them were excavated in deserted ants' nests. These ants' nests are generally placed against the trunks of very large trees, but occasionally against those of Cocoanut Palms at heights of from 4 to 20 feet from the ground, and vary from 12 to 30 inches in diameter; being composed, as I believe, of some sort of clay, they are extremely hard, and difficult to break. I had to dig out the nests with a large clasp knife. It is in the larger nests that the Kingfishers' nest holes are excavated. The tunnel, about 2 or 2½ inches in diameter, is in the centre of the ants' nest, and goes in for about 6 inches, where it terminates in a chamber about 7 inches in diameter; the bottom of the chamber contains a quantity of pulverized earth. I saw the bird fly out of two of the nests, and shot the female above referred to as she was entering the third."

The egg in question is of the purest white, quite devoid of gloss (which it would probably have had if laid in the normal fashion instead of being obtained by a cæsarean operation), is a broad oval, somewhat pointed towards the smaller end, and measures 1·16 by 0·98 inch.

134.—*Alcedo bengalensis, Gmel.*

The breeding season of the Little Indian King Fisher seems to vary very materially according to locality. In Madras Davison found, as he considers, a nest in January; in the Nilghiris and the Deccan it lays in March. I got them in the Doon and in the Terai below Darjeeling during May, and Captain Cock obtained them in June in Cashmere. They bore a very narrow hole, rarely exceeding 2 feet in depth and often scarcely half so long, in some bank immediately overlooking water (running water by choice) at a height of from 6 inches to 5 feet above the water level. The passage, which is barely 2 inches in diameter, terminates in a little circular-domed chamber, perhaps 5 inches in diameter, and 3 or 4 in height, in which the eggs, from five to seven in number, are deposited, Every nest that I have seen contained a quantity of hair-like fish bones and in one case the eggs reposed on a little patch of these, but that they are there placed *as* a lining I can hardly credit, as in the majority of cases there are fewer bones under the eggs than elsewhere in the chamber and passage.

Mr. R. Thompson tells me that " in the Bhabur and Kumaon Terai this species breeds from March to May, in long narrow holes dug out by the birds on the banks of small running streams."

Captain Hutton says: " On the 14th of June we took five semi-transparent, fleshy white eggs out of a hole in the bank of a stream in the Dehra Doon."

Mr. Davison says: " I took the nest of this species at Ootacamund in the last week of March. The nest was in a clay bank of a stream about 5 feet above the surface of the water. The diameter of the entrance of the tunnel was about 1·75 inch and went straight into the bank for about 2 feet, where it terminated in a small chamber 4 inches in diameter, which contained four perfectly fresh, almost round, very glossy, pinky-white eggs. There was no attempt at a lining to the chamber beyond the few odd scraps of small minnow bones. I once found what may have been intended for a nest in Madras towards the latter end of January, in a well; what I supposed to be the nest was placed in a hole in the masonry lining of the well, and round the entrance of the hole was accumulated a rather large quantity of small partially decayed fish and fish bones; but these had been placed there apparently not as a lining, but with the object of keeping the eggs in the hole, as it was one left when the scaffolding was removed, and consequently had a perfectly flat floor. I should, however add that though the bird was in the hole, it contained no eggs, and *may* therefore have been only a resting place."

Writing from Ahmednugger in the Deccan, Revd. H. Bruce said: " March 15th, 1869. Found this day at Ruhuri two nests of *Alcedo bengalensis*, in one of which were six eggs, and in the other five; the first nest was built in the bank of the river about 2 feet above the water; the hole was about 2 inches in diameter, dug horizontally in the sandy bank to the depth of 12 or 14 inches, and at the end of this was an excavation about 5 inches in diameter. The eggs were laid in a hollow at the bottom of this excavation; there was a layer of fragments of fish bones upon the earth, and the eggs were laid upon this. The other nest was not more than a foot above the water level, but in other respects similar to the first. Both nests were placed directly over the water, the first over *standing* water and the second over *running* water."

The eggs are exquisitely glossy, and, when blown, China-white, little ovals, or, some few of them, almost spherical. They are very like those of *Merops viridis*, but more glossy, and, as a rule, somewhat less round.

When unblown, they are pinky-white.

In length they vary from 0·75 to 0·87 inch, and in breadth from 0·65 to 0·72 inch, but the average, yielded by a large series of measurements, is 0·8 by 0·68 inch.

136.—*Ceryle rudis, Lin.*

The Pied King Fisher breeds everywhere throughout the plains of India, and invariably, I think, in holes of banks overlooking running water, and, as a rule, in those of our larger rivers. It is rare to find a nest anywhere except from 1 to 5 feet above the water level of some perpendicular earthen cliff going down straight into the water. Nine times out of ten the nest hole can only be got at from a boat.

They lay, I know, from the latter end of January to the commencement of April, but I suspect they also lay towards the end of the rains, for Mr. R. M. Adam "found a nest, October 30th 1866, in a cliff about 18 feet high overhanging the Jumna. The hole was about 4½ feet above water level, and ran for about 7 feet into the cliff. It contained four young birds able to fly."

The depth of the nest-hole varies according to the nature of the soil, extending to 4 or 5 feet where this is friable and sandy, and scarcely exceeding a foot in stiff clayey banks. Usually the burrow is quite horizontal and about 3 inches in diameter, and terminates in a chamber some 6 or 7 inches across, in which fish bones and grass may be found strewed thinly about, but in which I have never seen any approach to a real nest.

Six is the greatest number of eggs I ever saw taken out of a nest, but it is quite common to meet with four or five hard-set eggs in a nest. Mr. F. R. Blewitt remarks:—

"This species breeds from February to probably the middle of April. For its nest it makes a moderately-sized circular hole, extending from 4 to 5 feet in the high clay, or sand-bank of a stream or river. At the termination the hole is slightly enlarged for the better reception of the sitting birds. The eggs are simply deposited on the sand. On two occasions I witnessed the birds constructing the hole or nest; they alternately relieved each other at the work, and when tired sat together, some short distance off on the opposite bank, for a few minutes. On the 8th February last, near Bamah (Raepore District), in the high bank of the Mahanuddee, I found a nest with three fresh eggs, securing with them the parent birds. The length of the hole was about 5 feet. The next day I discovered another nest in the clay bank of a narrow but deep streamlet, with two fresh eggs. The length of the hole was about 3·5 feet.

"From personal experience I cannot affirm what may be the maximum number of the eggs, but last year (in, I think, March) my men found six young birds in a nest in the bank of a small stream. Of *Alcedo bengalensis,* they found, in the Saugor District, seven unfledged young in a nest."

Mr. Brookes writes: "I have found the nest of this bird frequently in the banks of the Tonse and Ganges. The nest is about 3 feet in the bank, and some 2 or 3 feet above the water level, and the hole by which the bird enters is about 2 inches in diameter."

Captain G. Marshall says: "This bird is very common in the Saharunpore District; it breeds in the usual places, holes in banks, and lays four shining white eggs. In this part of the country it breeds in March, and the young are hatched early in April.

"I *imagine* the young birds live with their parents sometime after they are fledged Since late in the season, I have noticed six or seven of them coming out of a single hole.

"I have noticed a curious fact about this bird; it is a gregarious breeder. I have taken three sets of eggs from the same hole; the hole led to a large open sort of cavern about 3 feet across, which was plentifully strewn with grass and rubbish, and the eggs were in different corners of it."

The eggs are typically very broad ovals, at times nearly spherical; not unfrequently, however, they are curiously pointed towards one end.

When blown they are a pure China-white and have a high gloss. In length they vary from 1·12 to 1·2 inch, and in breadth from 0·9 to 0·97 inch, but they average about 1·15 by 0·92 inch.

137.—*Ceryle guttata, Vig.*

The Pied Himalayan Kingfisher breeds undoubtedly in the banks of all the larger streams of the Sub-Himalayan ranges, but I have only once succeeded in meeting with a nest, and that was in June in a stream below Subatoo, and unfortunately contained four young birds. It was a large hole fully 4 inches in diameter, ran about 18 inches into the bank, of loose decomposed shale, and terminated in a chamber, containing a quantity of fish bones and grass, fully 10 inches in diameter. Mr. R. Thompson tells me: "The large Pied Kingfisher breeds from April to June in the banks of the larger well-wooded streams, frequently in the deepest parts of forests. Sometimes and more commonly they breed in holes dug out by themselves, at others they suit themselves to ledges and shelves of rocks! Three or four is the usual number of young ones. The old birds may often be seen carrying fishes from 6 to 7 inches in length to feed the young ones with. The fish are always swallowed whole."

138.—*Psarisomus Dalhousiæ, Jameson.*

On the breeding of the Yellow-throated Broadbill, Dr. Jerdon says: "The nest and eggs were once brought me (at Darjeeling). The former was a large structure of moss and grasses loosely put together, and was said to have been placed in the hole of a tree. The opening of the nest had apparently been at the side, but it was so much damaged by being pulled out of the hole, and was so little coherent, that I could not exactly ascertain this point. The eggs were two in number, and white."

Mr. Hodgson gives a different account; from his notes it appears that this species begins to lay in April, the young being ready to fly in June or July. The nest, which he also figures, is described as suspended from a tree, composed of fine roots and creepers in which leaves are largely intermingled; in the side about the centre, is a circular aperture which is protected by a sort of hanging portico or curtain of leaves; the lining is said to be grass, roots and dry bamboo leaves. The nest is drawn as of a very regular egg-shape, the smaller end only, from which it is suspended, being drawn out into a point. The greatest length is nearly 9 inches, the breadth five, the diameter of the aperture barely two; the drawing of the nest shows that it is very compactly woven, exteriorly with roots and fibres. It is noted that they lay three to four eggs, breed only once a year, and that both the male and female assist in rearing the young. The egg is figured as pure white, a rather broad oval decidedly pointed towards the small end, measuring 1·1 by 0·75 inch.

Captain G. F. L. Marshall, writes to me that on the 16th of June he killed a female of this species, at Nynee Tal, at an elevation of about 5,000 feet above the sea. The oviduct contained an egg, nearly ready for expulsion, white and with no indications of colouration, or markings.

139 *quint.—Cymbirhynchus macrorhynchus, Gmel.*

The Revd. Mr. Barb who obtained this species, the Common Rouge-et-noir Broadbill, in Tenasserim, states, as quoted by Mr. Blyth, that "this species is common in watery situations, and suspends its nearly globular nest, which is constructed of small twigs, from the branches of trees growing directly out of the water ; the eggs are four in number, and pale spotless blue."

For my part I should have expected the eggs to be white.

140.—*Dichoceros homrai, Hodgs.*

Mr. R. Thompson tells me that "the Great Indian Hornbill begins to breed in April; the young birds are flown by the end of June. They lay in holes of lofty yet hollow trees, sometimes in the valleys, at others on the sides and slopes of well-wooded low hills. I have seen lots of nests of these birds, but never got down their eggs. That the female is a very close sitter I have repeatedly verified. I have watched nest after nest, and have seen the cock bird with his throat full of berries coming to the hen and feeding her. I do not know about the male plastering the female in with his ordure as is stated by Jerdon. Meer Khan, my chuprassi, who went up to a nest, saw nothing of it beyond what the female herself had ejected, and which covered the sides of the orifice in which the nest was placed. He pulled out three young ones, funny-looking wretches, out of the hole. They were covered with fine white down and their red uncouth-looking bills made them hideous.

"Shy birds, usually, but when breeding they become bolder. When a fledged young one is shot, the old birds remain a considerable time near, uttering their loud and frightful cry at various intervals as if it were to call the missing one. During the coupling season these cries are truly horrible. One knows what the camel is capable of at that season. Here we have the Homrai which is even worse.

"The old birds are very faithful. If one is shot the other will remain a long time going from tree to tree uttering its loud yet mournful cries. They are sometimes gregarious to some extent. Last December I counted 15 in one flock. In fact during the whole of last winter I noticed a very large number of flocks composed of individuals ranging from 5 to 15 in number. They are fruit-eaters, but eat flowers and buds readily."

I do not vouch for the distinctness of this and the next species, I merely follow Mr. Gray in separating the two forms.

140 *bis.—Dichoceros bicornis, Lin.*

Col. Tickell gives us the following account of the nidification of the Great Malayan Hornbill :—

" Kyik, on the Houngthran River, February 16th, 1855. On my way back to Moulmein from Mooleyit (a celebrated peak in the Tenasserim Range) when halting at Kyik, I heard by the merest chance from the Karen villagers that a large Hornbill was sitting on its nest in a tree close to the village, and that for several years past the same pair of birds had resorted to that spot for breeding. I lost no time accordingly in going to the place next morning, and was shown a hole high up in the trunk of a moderately large straight tree, branchless for about 50 feet from the ground in which the female I was told lay concealed. The hole was covered with a thick layer of mud, all but a small space, through which she could thrust the end of her bill, and so receive food from the male.

" One of the villagers at length ascended with great labour by means of bamboo pegs driven into the trunk, and commenced digging out the clay from the hole. While so employed, the female kept uttering her rattling sonorous cries, and the male remained perched on a neighbouring tree, sometimes flying to and fro and coming close to us. Of him the natives appeared to entertain great dread, saying he was sure to assault them; and it was with some difficulty I prevented them from shooting him before they continued their attack on the nest. When the hole was enlarged sufficiently the man who had ascended thrust in his arm, but was so soundly bitten by the female whose cries had become perfectly desperate, that he quickly withdrew it, narrowly escaping a tumble from his frail footing. After wrapping his hands in some folds of cloth, he succeeded with some trouble, in extracting the bird, a miserable-looking object enough, wasted and dirty. She was handed down and let loose on the ground, where she hopped about, unable to fly, and menacing the bystanders with her bill, and at length ascended a small tree, where she remained, being too stiff to use her wings. At the bottom of the hole, nearly 3 feet from the orifice, was a solitary egg, resting upon mud, fragments of bark and feathers. It was of a dirty yellowish brownish-white, spindle-shaped or pointed at either end, and of a coarse surface indented with numerous pores; longitudinal and transverse axes $2\frac{1}{16}''$ and $1\frac{7}{8}''$ respectively. In the hole were numerous berries, resembling the wild " Jamoon," in all stages of decomposition. The female, I should remark, was deeply stained with a yellow " exudation from the uropygial gland, frequently observed on the feathers of this species, *B* (*Hydrocissa*) *pica*, and *B. albirostris*."

Mr. W. Theobald makes the following remarks on the breeding of this bird in Tenasserim :—" Lays in the 3rd week of February. Eggs, one only, ovato pyriform. Size, 2·68 inches by 1·88 inch, colour, pure-white, for the measurement of an egg I am indebted to Captain Tickell, who was fortunate enough to observe the female on the nest."

The Reverend Mr. Mason says, however, that they lay from three to five eggs.

I subjoin an account by Mr. Wallace of a nest of this species which he met with in Sumatra :—

" I had sent my hunters to shoot, and while I was at breakfast they returned bringing me a fine large male of the *Buceros bicornis*, which one of them assured me he had shot while feeding the female, which was shut up in a hole in a tree. I had often read of this curious habit, and immediately returned to the place accompanied by several of the natives. After crossing a stream and a bog, we found a large tree leaning over some water, and on its lower side, at a height of about 20 feet, appeared a small hole and what looked like a quantity of mud, which I was assured had been used in stopping up the large hole. After a while we heard the harsh cry of a bird inside and could see the white extremity of its beak put out. I offered a rupee to any one who would go up and get out the bird, with the egg or young one, but they all declared that it was too difficult, and they were afraid to try. I therefore very reluctantly came away. In about an hour afterwards, much to my surprise, a tremendous loud hoarse screaming was heard, and the bird was brought to me, together with a young one which had been found in the hole. This was a most curious object, as large as a pigeon, but without a particle of plumage on any part of it. It was exceedingly plump and soft, and with a semi-transparent skin, so that it looked more like a bag of jelly, with head and feet stuck on, than a real bird.

"The extraordinary habit of the male in plastering up the female with her egg and feeding her during the whole time of incubation and till the young one is fledged is common to several of the large Hornbills, and is one of those strange facts in natural history which are stranger than fiction."

144.—*Ocyceros* ginginianus*, *Shaw.*

The Northern Grey Hornbill breeds from April to June, in holes and hollows of large soft-wooded trees, such as the Aroo (*Ailanthes excelsa*), the Semul (*Bombax*, several species), and the Peepul (*Ficus religiosa*). The egg-chamber is usually very large, at least 1 foot in diameter, and the aperture is always more or less closed with the droppings of the bird, whether so placed by purpose aforethought, in view to increasing the internal temperature of the cavity, or accidentally collected about the aperture, in the removal daily by the female of her droppings, I cannot myself say from personal observation. The eggs are from three to five in number; but, though I have opened many nests, I have only once obtained the eggs; in all other cases I have found from one to four unfledged young ones. As far as I can judge, the female never leaves the nest-hole from the day she lays her first egg until her young are at least one week old. My friend, the late Mr. C. Horne, gives a good account of the nidification of this species :—

"In April 1868 I received intelligence of two nests, and found that both had been made in the trunk of "Semul," or Cotton-trees (*Bombax heptaphyllum*), the bird having dug out and enlarged with his bill holes in this soft wood, which had been previously used by Parrots.

"In each case I obtained three eggs; and the hole, at a great height from the ground, appeared to have been plastered up with cowdung, or something nearly resembling it. I could not, however, determine this positively, as in each case I had to go some 6 or 8 miles, and so had no opportunity of observing the process. The bird which I took from one nest had lost many of her loosely put-on feathers and appeared to be in bad condition. As, however, the natives wanted her flesh for medicinal purposes, I allowed them to take her.

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* I propose this subgeneric name for the present species and *Tickellii*, Blyth; Bonaparte's name *meniceros*, of 1854, having been previously otherwise applied by Gloger in 1842.

"I was, however, more fortunate at the close of the same month (April 1868). On my lawn, surrounded by other trees, stood a noble Sissoo-tree (*Dalbergia sissoo*); and where the first great fork diverged was a hole, for the possession of which, for purposes of incubation, the Rollers and Parrots were always noisily contending. I had often wished the Hornbills to use this; and I was much pleased to see that, after great consultation and inspection, despite much vociferation by the Rollers and screeching by the Parrots, they on April 28, 1868, made up their minds to use it. The hole was nearly a foot in depth and roomy inside. On the 29th of April the female went into the hole and did not again come out.

"There was sufficient room in it for the female to draw in her head altogether when she wished to conceal herself or to bring up the ordure from below.

"The hole being about 10 feet from the ground and opposite my verandah, I could watch everything perfectly through a glass. The tree was also very near to the house.

"From the time the female went in, the male was most assiduous in feeding her, bringing generally the small Peepul-fig.

"On April 30th I observed the female working hard at closing the orifice with her own ordure. This she must have brought up from the bottom of the hole; and she plastered it, right and left, with the flat sides of her beak, as with a trowel.

"I never saw the male bring anything but food; and I never found any fruit which had been rejected under the tree, and but very little ordure, which latter had apparently been thrown out by the female when the closing-work was finished.

"The male bird would alight near, then fly to the hole (holding on to the bark by his claws) and knock with his beak. On this, the points of that of the female appeared and received the fruit, when the male flew off.

"I herewith beg to submit some of the substance with which the hole was closed up, which is manifestly what I suppose it to be, and when fresh, possesses great viscidity. It contains the remains of insects, which probably the female had eaten before she entered the hole—thus confirming Dr. Jerdon's statement as to their various diet.

"The hole was at first perhaps 6 inches in height, and 3 or 4 wide. When closed up, the opening at the widest part was a little larger than would admit the finger. It should, however, be borne in mind that the bill opened upwards, and thus had 3 or 4 inches' play. The plastering-operation took two or three days, after which the ordure was thrown out.

"The third Hornbill used to hover about, watch proceedings, and sometimes quarrel with the accepted lord, but he never brought food to the female.

"On May 7th, thinking that I had given time enough for the female to lay her three eggs, which I wanted, I got a ladder, opened out the nest, and with some difficulty got out the bird, who was fat and in good condition, with the desired eggs (three). At first she could scarcely fly, but did so after a little time.

"The natives, who know the habits of these birds well, told me that the female digs herself out directly her newly hatched young need food; and this is most probably correct."

The eggs that I have are a uniform dull-white, slightly soiled and discoloured here and there, and are broad, rather perfect, ovals, devoid of gloss, and recalling the eggs of *Taccocua sirkee* and *Centrococcyx rufipennis*. Indeed but for being a trifle larger, they might be mistaken for the eggs of this latter species.

They vary from 1·64 to 1·72 inch in length, and from 1·2 to 1·27 inch in breadth, but seven eggs averaged 1·7 by 1·22 inch.

146 bis.—*Rhyticeros subruficollis, Blyth.*

Mr. W. Theobald makes the following remarks on the breeding of this species, Blyth's Plait-beak Hornbill, in Tenasserim :—" Lays in the third week of February. Eggs, three in number; ovato-pyriform. Size 2·20 inches by 1·55 inches. Colour, pure white. Mode of incubation said to be similar to that of the Homrai."

146 *ter.*—*Rhyticeros obscurus, Gmel.*

The only egg of the Common Plait-beak Hornbill that I have seen was taken near Sandoway on the 12th March by Mr. Theobald. It is a moderately broad oval, slightly compressed towards the smaller end; a dull, glossless, chalky white egg with a rough surface and tinged brownish towards the larger end. Held up against the light, the shell is a pale buffy yellow. It is very like the egg of *Ocyceros ginginianus,* but larger, coarser, and rougher. It measures 1·95 by 1·5 inch.

Mr. Theobald writes : " The *plicatus* eggs were taken at my order on March 12th in Sandoway. I had for some little time noticed numbers of this species flying about in pairs, and latterly the males, with their craws ludicrously distended with fruits, returning at night alone. I accordingly enquired of some villagers if they could get the eggs and the result was just two eggs taken in one tree. There is no doubt of the species; as it was the only one there, and one that is well known to the natives."

147.—*Palæornis sivalensis, Hutton.*

The Northern Rose-band Paroquet, the Northern Indian representative of *P. eupatria. Lin.* breeds in the Kangra Valley in April, laying four eggs in large holes in trees, excavated by the birds themselves. Though I have found plenty of nests with young, I have never taken the egg myself, and owe this information to Captain Cock.

An egg of this species, the Northern Rose-band Paroquet, taken by him, was a very long oval, very much pointed towards one end, white, a good deal soiled, and with little or no gloss. It measured 1·52 by 0·95 inch.

Of this species Captain Hutton remarks: " Towards the end of January and beginning of February, it begins to cut a circular hole in some tree wherein to lay its eggs, which are usually two in number and pure white. The tree generally in request for this purpose is the *Semul* or Cotton tree *(Bombax heptaphyllum* and *malabaricum),* although, sometimes, even the hard-wooded *Sál (Shorea robusta)* is chosen; the entrance hole is a neatly cut circle, either in the trunk or in some thick upright branch. The trees selected by these birds are not situated in the depths of the forests, but are detached on the outskirts, and what is curious in such a quarrelsome bird there are often three or four nests in the same tree. The eggs are hatched in about twenty-one days, and in the middle of March the young birds are about half-fledged, and are then removed for sale."

148.—*Palæornis torquatus, Bodd.*

So far as my experience goes, March is the month in which the majority of our common Rose-ringed Paroquets lay, but I have taken the eggs as early as the 5th of February and as late as the 3rd of May, though this latter date is, I believe, quite exceptional.

Mr. Adam remarks : "On the 22nd January I observed a pair of Parrots scooping out a hole in a Neem tree on the Agra and Muttra Road, and on the 30th January I observed a pair with a nest in a mud wall."

Captain Hutton correctly notices that "at the pairing season the female of this species becomes the most affected creature possible, twisting herself into all sorts of ridiculous postures, in order, apparently, to attract the notice of her sweetheart, and uttering a low twittering note the while in the most approved style of flirtation, while her wings are half-spread and her head kept rolling from side to side in demigyrations; the male sitting quietly by her side looking on with wonder as if fairly taken aback,—and wondering to see her make such a guy of herself. I have watched them during these courtships until I have felt humiliated at seeing how closely the follies of mankind resembled those of the brute creation. The only return the male made to these antics was scratching the top of her head with the point of his beak, and joining his bill to hers in a loving kiss."

They lay in holes in trees, chiefly, in Upper India, in Mango and Siris trees, I think, but I have met with them in fifty kinds. The mouth of the hole which is circular and very neatly cut and, say 2 inches on the average in diameter is sometimes in the trunk, sometimes in some large bough, and not unfrequently in the lower surface of the latter. It generally goes straight in for 2 to 4 inches and then turns downwards for from 6 inches to 3 feet. The lower or chamber portion of the hole is never less than 4 or 5 inches in diameter and is often a large natural hollow, three or four times these dimensions, into which the bird has cut its usual neat passage. The hole has no lining, only a few chips of wood on which the eggs rest.

The normal number of the eggs is four, but I have found as many as six, and have taken six nearly fledged young ones out of one hole; in another nest I once found two fresh eggs, one addled egg, and one young bird, at least eight days old. On another occasion I found in a small hole ten eggs and two females, though there was only room for one female to sit on the eggs.

The eggs are pure white and glossless, though here and there an egg with some faint glaze may be met with. The normal shape is a moderately broad oval, very perceptibly pointed towards one end, but long and spherical varieties occur. Although devoid of gloss, the texture of the shell is very firm and compact, and there is none of the chalkiness about them observable in the eggs of the Hornbills and Coucals.

In length, the eggs vary from 1·05 to 1·37 inch, and in breadth from 0·87 to 1·02 inch, but the average of fifty eggs measured was 1·2 by 0·95.

149.—*Palæornis purpureus, Müll.*

The Western Rose-headed Paroquet breeds throughout the plains of Continental India, high up on Mount Aboo, throughout the Salt Range and the lower ranges of the Himalayas up to heights of 4,000 or 5,000 feet, from

Murree to the Ganges. I do not know which species we obtain in Kumaon, but in Nepal and eastwards this species is replaced by *bengalensis*. April is the month in which, according to my experience, they commonly lay, but I have found eggs both in March and May.

As a rule, they excavate holes for themselves, with small neat circular apertures, in large trees or huge branches of trees, but I have also seen eggs in natural cavities of decaying trees. Four I take to be the normal number, but I have known five and even six eggs to occur. Mr. R. Thompson writes that this species "breeds from April to June, and selects usually a tree of moderate height and one somewhat decayed. They scoop out a fresh hole every year; at least, those nests I have found have always proved to be new ones. The aperture is perfectly circular and just large enough to admit of one bird entering in at a time. The decayed excrescence of a branch is invariably chosen, the birds scooping out the decayed wood and in the form of the nest following the course of the branch in its growth from the centre of the trunk. The egg cavity is scooped out larger than the entrance and passage, and usually contains four pure white eggs, much rounded, of about 1 inch in length and $\frac{8}{10}$ inch in the broadest part. The eggs are laid without any further preparation of a nest or lining of soft material beyond what the decayed wood furnishes as a foundation. The female usually loses her long uropygial feathers, thereby acquiring greater facilities for movements of her body in the nest. She is a close sitter and will allow herself to be taken rather than desert the nest for a while. The young are easily tamed and soon learn to repeat a short air whistled to them. Many breed together in the same tree, and they evince, in many of their habits, a social and gregarious disposition."

Captain G. L. Marshall remarks: "*P. rosa* is common in the Saharunpore District and breeds in March in hollow decayed trees, not cutting out a hole for itself, but selecting a natural hollow, generally in a Toon or Bakain (*Melia sempervirens*) tree; it lays four round white eggs on the decayed matter at the bottom of the hole, which is without artificial lining; some of the eggs are faintly spotted all over with yellowish brown, but these marks almost entirely disappear with washing and are probably only dirt."

As a rule, the eggs of this species are proportionally broader ovals than those of the common Rose-ring Paroquet, and they are more distinctly pointed towards the small end. The eggs are much smaller than those of *torquatus*; far more so than the relative sizes of the birds would have led one to suspect. The quite fresh egg is of course pure white, but they are almost invariably somewhat discoloured, and at least half my specimens are a dingy cream colour. They are quite devoid of gloss.

They vary in length from 0·9 to 1·05 inch, and in breadth from 0·75 to 0·86 inch, but the average of some twenty eggs measured was 1·0 by 0·81 inch.

150.—*Palæornis schisticeps*, *Hodgs.*

The Slaty-headed Paroquet breeds throughout the Himalayas, south of the first snowy range, at heights of from 4,000 to 7,000 feet. During the winter they keep much lower down, but about March they begin to come upwards to breed, and the majority lay during the latter half of March and April, though I took one nest of fresh eggs on the 5th of May.

They nest at times in natural hollows of trees, in fact, this, I think, is more usual, but not unfrequently in holes cut by themselves. The tree in which I have most commonly found them is the Hill Oak. The eggs are often very deep down and difficult to secure, especially when, as is often the case, the tree is a sound one. The egg-chamber is at times very large, but is never less than 4 or 5 inches in diameter. They lay from four to five eggs, which are commonly placed on chips of wood; the nest has no other lining. The female sits very close and will not leave her eggs, though you may be ten minutes hacking away with an axe to get down to the nest.

Captain C. H. T. Marshall, writing from Murree, says: "These nests were invariably very high up in tall trees, most of them in newly-made holes. All that we found this year contained young birds. We got the egg last year. It is 1·15 long by ·95 inch broad. This species breeds at the latter end of April. Elevation 6,000 to 7,000 feet."

Captain Hutton remarks: "Although a true mountaineer, it descends in the winter season to the gardens and groves around Dehra and is often mixed up with the flocks of *P. purpureus* and *P. torquatus*; but in the early spring they return to the hills which they never at any season entirely quit, and breed in April and May. The tree most usually selected is a large species of gum-yielding *Bauhinia*, each tree harbouring but one pair of birds."

The eggs are rather broad ovals, pure white when fresh, and glossless. In size they are intermediate between those of *P. purpureus* and *P. torquatus*. They appear to be often much soiled and stained during incubation, as is not uncommon with those of *P. purpureus*, but which is less common with those of *P. torquatus*. In length these eggs vary from 1·08 to 1·17 inch, and in breadth from 0·89 to 0·94 inch, but the average is about 1·12 by 0·92 inch.

152.—*Palæornis fasciatus, Müll.*

I have never myself found the eggs of this, the Indian Red-breasted Paroquet. Mr. R. Thompson writes to me as follows:—

"*Palæornis javanicus*. If this be the bird described under the above name by Dr. Jerdon, his description is erroneous in so far that the wing-patch is not red but yellow, paling to grass green on the edges.

"The Madhun Gour Tota breed in the lofty Sâl forests of the Sub-Himalayan Range, and are peculiarly restricted to this locality when breeding. Any hole in a tree serves for a nest provided it is near the top of the tree, and the eggs are four in number, pure white, and about the size and shape of those of *P. torquatus*. The breeding season commences in March, and is carried on till the middle of May, when the young birds leave the nest. Large numbers of them are taken every season when they are yet too young to be able to fly, and carried to the plains where they are much prized by the natives, learning easily to repeat words and phrases taught them. This Paroquet is generally distributed through the dense and lofty forests, but nowhere is it very common."

I have seen but few specimens of this bird's eggs; these were broad ovals, somewhat smaller than the average of *torquatus'* eggs, and like them, of a dull, glossless, white colour.

Six eggs vary from 1·12 to 1·18 inch in length, and from 0·94 to 1·0 inch in breadth.

152 bis.—*Palæornis erythrogenys, Blyth.*

Mr. Davison remarks: "On the 17th of February I found on the island of Trinkut, Nicobars, a nest of the Nicobar Paroquet in a hole in a branch of a Screw Pine (*Pandanus*) about 12 feet from the ground; the nest contained two young birds, one well covered with feathers, the other a tiny little thing, with its eyes closed and without the trace of a feather. There was no lining to the hole, only a little powder from the decayed wood. Again, on the 2nd March, I found a nest also on the island of Trinkut, situated about 30 feet above the ground, in a hole in a branch of a large forest tree; this nest contained two very young birds. On the 17th of April, at Port Mouat, Andamans, I saw a female (*P. affinis*) feeding two young ones that were sitting on the edge of a hole in an old dry mangrove stump about 12 feet high. As I did not require the birds, I did not climb up to the nest, and so cannot say whether the hole was lined or not. It is curious that the bills of all the young of these species that I examined were quite red, both upper and lower mandibles; the adult females always have the bills black. Can it be that the bills turn from red in the young females to black in the adult females? In *P. fasciatus* the young males have the upper mandible black, turning to red as they become adult. The young of *P. erythrogenys* and *P. affinis* that I examined *may* have been all males; but this I think was not likely. I must have seen during my stay at the Andamans and Nicobars at least thirty young birds of these species, of all sizes, either with convicts or in the Nicobarese huts, and yet I never saw a young one that could not fly that had a black upper or lower mandible. The only very young one that I actually dissected was a male."

153.—*Loriculus vernalis, Sparrm.*

The Indian Loriquet breeds in the Terai below Darjeeling, the Bhootan Dooars, Assam, Eastern Bengal, Burmah, and the Andamans. It lays from three to five eggs, from March to May, in holes and hollows of trees without any nest.

Mr. Davison says: "On the 19th April, while returning to Ross from Port Mouat, a Burman convict, who was with me, saw a bird of this species fly into a hole in the branch of a forest tree growing by the road-side. He called my attention to this, and I sent him up the tree. On his climbing up, he found the bird (which he caught and brought down with him) sitting on three round white eggs. The hole was about 20 feet from the ground, and contained no lining or attempt at a nest, the eggs being laid on some soft black earthly-looking powder that lay at the bottom of the hole, and which had evidently fallen from the top and sides of the hole. The hole, which was a natural one, not excavated by the bird, was moderately large, but not quite large enough to admit the convict's hand without a little cutting away at its lower edge."

The eggs above referred to, which are the only ones of this species that I have by me now, are very broad, and obtuse-ended ovals, in colour dirty-white, and entirely glossless. They vary from 0·7 to 0·75 inch in length, and from 0·58 to 0·6 inch in breadth.

154.—*Picus himalayensis, Jard. and Selb.*

The Himalayan Pied Woodpecker breeds freely all over the lower ranges of the Himalayas, west of Sikhim, at elevations of from 3,000 to 8,000 feet. They lay in holes in trees, oaks being decidedly their favorites, and, as a rule, in holes excavated by themselves, and with a narrow, circular, neatly-cut aperture. I once, however, saw a pair with young in a natural cavity, to which the birds appeared to have done nothing. The hole varies greatly in depth and diameter, but the egg chamber, when excavated by the birds, is about 4 inches in diameter, generally quite devoid of lining, the eggs being laid on chips of wood,—but at times, with a few dead leaves, some moss or moss roots, which, whether blown in by the wind or intentionally deposited by the birds, constitute a kind of lining.

I have only found the eggs between the middle of April and the end of June, but I have seen young birds out of the nest about the end of June. Four or five is the usual number of the eggs, and these, when fresh and unblown, appear to be of a delicate, pinky, pearly hue, as are all such delicate glossy-white eggs, owing to the partial showing through of the yolks.

Captain C. H. T. Marshall, writing from Murree, remarks :—

" This breeds early and very high up in the trees. All the nests we found at the end of May had nearly full-fledged young in them. Elevation about 7,000 to 7,500 feet."

I have, however, found fresh eggs as late as the middle of June, and nests not more than 10 feet from the ground.

Almost all my eggs of this species, and I had many, have been lost, stolen, or destroyed, I do not know which.

The only eggs I now possess of this species were obtained on the 28th June in the neighbourhood of Kotegurh. They are the usual Woodpecker type, somewhat larger than those of *mahrattensis, brunnifrons* and *Macei*, but smaller than those of *Brachypternus aurantius;* pure white (when blown), very glossy, and slightly pyriform.

They vary in length from 0·97 to 1·03 inch, and in breadth from 0·72 to 0·78 inch.

156.—*Picus cathpharius, Hodgs.*

The Lesser Black Woodpecker, according to Mr. Hodgson's notes, begins to lay in April, and most of the young are ready to fly in July. It makes a nest like other Woodpeckers, excavating a hole in the trunk of a tree and laying therein four eggs on the chips and dust the result of the excavation. The eggs are pure white, and one is figured as 0·92 inch in length by 0·67 in breadth.

157.—*Picus Macei, Vieill.*

The Indian Spotted Woodpecker breeds, I believe, during March, April, and May, according to locality, throughout Eastern Bengal, Assam, and the lower ranges of the Himalayas from the Brahmapootra to the Cabool River. I have never found a nest myself. Captain Hutton, writing from near Mussourie, says:—

"On the 20th of April I found a nest of this bird at 5,500 feet in a hole in a large *Andromeda ovalifolia*; the hole was bored in a rotten branch by the bird, and the nest was nothing more than the chips and fragments of the rotten wood collected at the bottom. It was about 14 inches in depth. The eggs were three in number and pure white; these I took away, and to my surprise a few days afterwards I found that the bird had laid two more eggs, thus making five in all."

Captain C. H. T. Marshall, writing from Murree, remarks:—

"One nest taken on June 2nd, in a hole in an oak tree; three eggs somewhat hard-set. Length ·9 by ·65 inch; elevation 6,500 feet."

The eggs of this species, which I owe to Captain Hutton, are of the usual Woodpecker type, very similar in shape and size to those of *P. brunnifrons*, but a trifle smaller. On the other hand, they average perhaps slightly larger than those of *P. mahrattensis*. Typically they seem to be moderately elongated ovals, and the shell is of course pure white, and very thin and glossy.

The eggs I have only vary from 0·88 to 0·92 inch in length, and from 0·66 to 0·7 inch in breadth, but I have only three specimens; so these measurements go for very little.

159.—*Picus brunnifrons*, *Vig.*

The Brown-fronted Woodpecker breeds throughout the Himalayas, west of Nepal, but rarely, if ever, at any elevation exceeding 6,000 feet, and I have seen nests as low as 2,000 feet. They lay in April and the first half of May, in holes in trees (oak and fir chiefly), sometimes in the stems, sometimes in large branches, usually neatly-cut ones excavated by the birds themselves, occasionally natural ones, at heights varying from 6 to 40 feet from the ground.

There is no lining to the nest, only a little of the débris of the excavation is left at the bottom for the eggs to rest on. These are usually four in number, but I have seen five.

Captain Unwin, of the 5th Goorkhas, says: "I found a nest in the Agror Valley, 6th May 1870. It was a mere hole in a dry fir tree, about 9 feet from the ground; it contained no lining, the four white hard-set eggs were laid on small fragments of wood." Mr. R. Thompson remarks:—

"This is a common bird in the Bhabur of Kumaon. I have met with both adult and immature birds. It breeds in the Bhabur."

Captain Hutton, writing from Mussouri, says: A Paroquet "(*P. rosa*) first made a hole in a tree of *Andromeda ovalifolia*, but after a few days left it; in a week or so it came back and again took possession, but was shortly after driven out by *Picus brunnifrons*. In three or four days, however, the latter also left it, and then commenced boring in quite a different direction and near some servants' houses, where it selected the hard oaken gate-post of a wheat-field, immediately on a public road, along which servants and cattle were passing and re-passing hourly. The hole was bored within 2 or 3 inches of the summit of the post, which was about 5 feet high; the fine rotten chips within were strewed on the bottom, and upon these, four fleshy-white eggs were laid; these, by cutting a small hole at the back, were taken out at a depth of 5 inches. When cleaned of the contents, the fleshy tint was lost, and the eggs became of an opaque-white. Diameter 0·87 by 0·6 inch."

The eggs of this species are of the usual somewhat lengthened and pointed oval form, pure-white and glossy, and very slightly larger than those of *P. mahrattensis.* The eggs are slightly larger, and, as a rule, a good deal narrower than those of the Lesser Spotted Woodpecker, *P. minor,* of Europe; sometimes, however, short oval varieties occur.

I have very few eggs of this species now by me; these vary in length from 0·94 to 0·98 inch, and in breadth from 0·72 to 0·73 inch, but (I write from memory) these seem to me to be abnormally large eggs, and very probably Captain Hutton's dimensions more nearly represent the ordinary size.

160.—*Picus mahrattensis, Lath.*

The Yellow-fronted Woodpecker (to the best of my belief) breeds throughout India in the plains and up to an elevation of about 2,500 feet.

I myself have always found the eggs in March, but I have known eggs taken in February and April.

I do not think it has any choice of trees; I have found its nest in a dozen different kinds, but, as a rule, the stem or branch in which it excavates its hole is partially decayed..

The following one of many notes, recorded when I was at Etawah, is all perhaps that I need say further about the nidification of this species, except that the number of eggs is almost invariably three.

" On March, the 30th, took this bird sitting on three nearly fresh, delicate, pyriform, alabaster-like eggs, which, when unblown, were quite pinkish. The bird had made a hole on the under side of a branch; the hole was about 1·5 inch in diameter, and about 14 or 15 inches below the entrance the eggs were laid on the chips of the wood made in excavating the hole. The branch, which was only partially decayed, was about 10° out of the perpendicular, and the tree a moderate-sized Babool. Other Babools were sparingly scattered over the ground, and 200 yards off was a thick Mango grove, which one would have thought would have been preferred."

The late Captain Beavan said:—

" A female with three white eggs was taken from a hole in an " Asun" tree (*Terminalia alata*), and brought to me at Baramussia on the 5th March. There was no nest. The eggs are slightly elongated; 0·75 inch long by rather more than 0·62 inch broad."

These eggs were probably not carefully measured with calipers, the dimensions given being abnormally small.

The eggs are glossy white, and in shape a rather lengthened oval. When fresh and unblown, they have a delicate pink shade, due to the partial transparency of the shell. This is common to a great majority of the birds of this family. In size they differ little from those of the Lesser Spotted Woodpecker of Europe, but they are less spherical than those eggs usually are, and though sometimes fully as long or even longer, are never, I think, nearly as broad.

In length, they vary from 0·82 to 0·95 inch, and in breadth from 0·63 to 0·7 inch, but the average of a large series is 0·87 by 0·68 inch.

161.—*Hypopicus hyperythrus, Vig.*

Captain C. H. T. Marshall found nests of this species the Rufous-bellied Pied Woodpecker, at Murree towards the latter end of April. They were, as usual, mere holes in trees with the eggs deposited on the bare wood. The only egg I possess of this species and which was one of those taken by Captain Marshall, is a wonderfully regular oval, pure white, the shell very fine and glossy, and measuring 0·89 by 0·67 inch.

163.—*Yungipicus pygmæus, Vig.*

I know nothing personally of the nidification of the Himalayan Pigmy Woodpecker.

Mr. R. Thompson tells me that " it lays in April and May, in holes of trees, in the dense forest districts of the Bhabur and the lower Kumaon Valleys. The young birds are able to fly in June, four to five in number usually to each old couple. The birds migrate into cultivated districts in the winter."

164.—*Yungipicus nanus, Vig.*

Common as the Plains Pigmy Woodpecker is in the plains of Upper India, I have only once seen a nest, and have never myself taken the eggs. It breeds in March, making a tiny hole, the entrance to which is about 1·25 inch at most in diameter, in some large, more or less decayed, branch of a tree. The nest I found in April and which contained four young birds was in a huge arm of a Mango tree in Futtehgurh, and I have notes of nests found in a Seeshum and a Sirris tree.

The egg of this species is, to judge from the only two specimens I possess unusually spherical for a Woodpecker and large for the size of the bird. It is a very broad oval, pure white, and moderately glossy. Much the same shape as the egg of *Vivia innominata,* but less glossy and intermediate in size between it and the eggs of *Picus Macei.*

The two eggs measure 0·7 by 0·6 inch, and 0·73 by 0·62 inch.

166 bis.—*Chrysocolaptes Delesserti, Malherbe.*

Messrs. W. Davison and J. Darling inform me that the Southern Golden-backed Woodpecker breeds in the Nilghiris, at elevations of from 5,500 to 7,000 feet. It lays in December, January and February in large holes which it excavates for itself in the trunks of trees at all heights from 6 to 60 feet above the ground.

The bird lives all the year round in these holes, and when not disturbed lays year after year in the same hole.

The nest hole is about 3 inches in diameter at the entrance, runs in horizontally for a few inches, then turns straight down for another few inches, and then widens out into a chamber some 6 inches in diameter.

Neither of these gentlemen has ever found in any nest more than one egg, and they describe these latter as rather broad ovals, pinky white, with deader white streaks when unblown, pure white when blown, and in both states very glossy.

I have received no eggs and no exact measurements.

170.—*Gecinus squamatus, Vig.*

The Scaly-bellied Green Woodpecker breeds throughout the outer ranges of the Himalayas from the valley of Nepal as far as Murree, at elevations of from 4,000 to over 7,000 feet. It lays from March to May, both months inclusive, but by far the majority lay, I think, in April. Anyhow I have seen the young out of the nest and able to fly fairly by the end of May.

According to my experience, the Rhododendron and the Andromeda are the favourite trees of this species, but I have found their nests in various conifers, in oaks and even (just below the Buboo Pass, above Sooltanpoor, Kooloo) in a horse-chestnut. Usually they excavate holes for themselves some 2½ inches in diameter at the entrance, beyond which it turns down and runs downwards from 1 to nearly 3 feet before it widens into the chamber, which is not less than 5 inches in diameter, and which from the birds often cutting into a natural cavity is sometimes two or three times as large; occasionally the bird makes little or no cutting, but only accepts a long natural cavity in some partially decayed branch.

I cannot say that I have oftener found the nest at 40 feet than at 20 feet from the ground, and I have seen one that I could reach up to.

Five is, I consider, the normal number of eggs, but six is not uncommon.

This species is very plentiful about Simla, and writing from here the late Captain Beavan remarked: "On the 10th May I found the nest of this species with young ones; it was a round hole in the trunk of the common Simla Cedar *(Cedrus deodara)*, apparently dug out by the bird itself and too small to admit even the small hand of a native boy, so that I was unable to get a sight of the young."

Captain Cock gives me the following note from Dhurumsalla:—

"Nests in a hollow Oak, Rhododendron or other tree. A very wary bird; will fly off its nest while a person is some way off, and yet its nest is placed very deep down, seldom less than 3 feet. These birds have a knack of finding out a tree whose heart is decayed, and they work through the sound wood till they get to the heart, and then they go downward. Eggs, always six, placed on rotten chips; a fine porcelain-white in colour, and very polished. These birds remain with us all the year round, and are always fat and in good condition. I opened the stomach of a female shot during the winter, and late in the afternoon; it was crammed full of minute larvæ of some beetle."

Mr. R. Thompson, referring to Kumaon, tells me: "They are very common here. They lay in April, chiefly in the hollows of large trees, very often digging a hole for themselves in some large half-decayed branch. Rhododendrons are usually selected by this species for nidification."

Again from Murree Captain C. H. T. Marshall writes: "Several nests in the month of June, all with young. We got the eggs last year in May. They are somewhat smaller than those of the next species. The holes are always about 40 or 50 feet up the trees, at all elevations, from 5,000 to 7,000 feet."

The eggs are ovals, often much elongated, and commonly a good deal compressed towards the smaller end. Shorter and somewhat pyriform varieties are not uncommon. The shell is very fine and delicate, and has a most brilliant gloss. When unblown and fresh, they are suffused with a delicate salmon pink shade, being more or less translucent, but when blown are of an exquisite China-white. The eggs average slightly smaller than those of *G. viridis* of Europe.

My experience is opposed to Captain Marshall's view of *squamatus*, having a smaller egg than *occipitalis*; on the contrary, I think those of the present species average decidedly larger. In length they vary from 1·14 to 1·35 inch, and in breadth from 0·9 to 1·0 inch, but the average of a considerable series is 1·28 by 0·93 inch.

171.—*Gecinus striolatus, Blyth.*

The Lesser Indian Green Woodpecker I only know of as breeding in the Doon, the Kumaon Bhabur, and low valleys running up from it into the hills, and at comparatively low elevations in the Nilghiris, but it doubtless breeds in suitable localities everywhere in the Sub-Himalayan tracts, Assam, Eastern Bengal, and Burmah.

They lay from the end of March well into May, in holes of trees, stem or branch indifferently; five is the normal number of the eggs I believe, but I saw four young ones only (and no addled egg) in a nest in the Sewaliks.

Three specimens of the eggs of this species, which I owe to Miss Cockburn of Kotagherry, are, as might be expected, broad ovals, somewhat compressed towards one end, a pure China-white in colour and very glossy. One is as nearly as possible like a large egg of the Great Spotted Woodpecker *(P. major)* of Europe.

Other specimens differ in shape, being slightly elongated and pyriform ovals. In length they vary from 1·02 to 1·1 inch, and in breadth from 0·74 to 0·85 inch.

172.—*Gecinus occipitalis, Vig.*

The Black-naped Green Woodpecker breeds throughout the lower ranges of the Himalayas from Bhotan to Afghanistan at elevations of from 5,000 to nearly 8,000 feet, laying from the middle of April to the middle of June four, five, and even six eggs. As regards size and shape of hole, and choice of trees, all that has already been said of *squamatus* applies equally well to this species; but I agree with Captain C. Marshall that their nest holes are commonly placed much lower than those of the latter species, although I found one nest, in a huge fir tree on Nagteeba (behind Landour,) fully 30 feet from the ground.

Captain C. Marshall says (he writes from Murree):—

"This species breeds very low down in trees, the hole in which the nest was that we found on the 28th of May, being only 3 feet from the ground; it contained five fresh glossy-white eggs, long and pointed at the thinner end. They are 1·25 inch in length and ·85 in breadth. Elevation 7,000 feet."

I have always known the eggs of this bird to be laid on the bare wood in the inside of a pretty deep hollow of some more or less decayed tree; but on the 17th June, in the neighbourhood of Darjeeling, Mr. J. Gammie took five hard-set eggs of this species out of a large regularly-formed nest placed at the bottom of a hollow in a tree; the nest being for all the world like that of some *Garrulax*, composed chiefly of coarse moss, roots, intermingled with a little moss and portions of a few broad dry flag-leaves. This was below Rungbee near Darjeeling at a height of about 5,000 feet. It is simply impossible, in my opinion, that the Woodpecker should have had anything to do with the making of the nest, but it is very remarkable, I think, that it should even have accepted some other bird's nest as the receptacle for its eggs. The parent bird was captured on the eggs, so that there can be no mistake about the fact.

The eggs are very similar to, but usually smaller than, those of *Gecinus squamatus*; on the other hand, they are very decidedly larger than those of *G. striolatus*. They are of course pure white but only moderately glossy. In shape they are normally broad ovals, as a rule conspicuously compressed and pointed towards one end, but pyriform and greatly elongated varieties are not uncommon.

In length they vary from 1·14 to 1·35 inch, and in breadth from 0·83 to 0·92 inch, but they average 1·2 by 0·88 inch.

180.—*Brachypternus aurantius*, *Lin.*

The Gold-back Woodpecker breeds all over the plains of India during March and April, and again during June and July; but I have never known them breed in the Himalayas at a greater altitude than 3,000 feet.

I think that in the plains, the Mango is the tree in which they prefer to bore their nest-holes. These latter vary in diameter from 2·5 to 3·5 inches, run in horizontally for from 3 to 6 inches, and then turn downwards. Where the downwards shaft is bored by the bird, it is rarely above 8 or 9 inches in depth, but where, as often happens, the bird cuts into a natural cavity, the eggs may be found as much as 3 feet below the orifice. Where entirely excavated by the birds, the chamber is about 5 to 6 inches in diameter, but I have found the eggs at the bottom of a huge cavity a couple of feet across.

There is no nest; the eggs, the normal number of which is three, are laid upon a few chips of wood.

Mr. W. Blewitt says: "I found three fresh eggs of this species on the 17th July in a hole in a Siris tree situated on the canal bank near Hansie. The hole was about 17 feet from the ground, and contained no lining of any kind, the eggs being laid on the bare wood chips."

Captain G. F. L. Marshall, writing from Saharunpoor, remarks:—

"The bird is very common here. I found a nest early in June in a hole in a Mango tree; the orifice about 3½ inches in diameter and the hole about 8 or 9 inches deep; the orifice was concealed by a small spray growing out of the main trunk just beside it, and was about 20 feet from the ground; there were three eggs, oval, shining, white after being blown, and with a pale salmon tinge before blowing; they were laid on the small chips at the bottom of the hole which had no other lining whatever."

I have found the nest-holes at all heights from the ground from 3 to 40 feet. Sometimes a natural hollow is taken possession of and only rounded off internally.

Both sexes assist in incubation. I find the following amongst my notes:—

"On the 23rd of March I caught a bird, a male, in its hole, with two fresh eggs, very pyriform, and now when blown just like highly polished alabaster. I had the live bird 24 hours in a box, and when I popped him on to the trunk of the large Peepul tree overhanging my portico, instead of flying away, he ran about 1 foot up the tree, and taking no earthly notice of me set to work, devouring black ants at a great rate; whilst in the hand he erected his crest, screamed lustily and pecked most vigorously at fingers, or indeed anything put near him; he was a very bold bird."

And again "Brooks took a nest, if I may use the expression, on the 12th of March, out of a Mango tree near the Line; ten days previously we had seen the bird fly out of the hole, and had much enlarged the opening so as to allow a boy to introduce his arm. Yet after all this the bird still laid its eggs there. I caught a bird near Oreyah, on the 11th March, in an excavated hole, about 3 feet from the ground, in the trunk of a Mango tree. There were three very delicate white eggs, quite fresh, showing pinkish and somewhat orange where the yolk was, till blown, but pure white, very glossy and like polished alabaster when blown. They were very thin-shelled, rather long and pyriform, not a pin to choose between them. There was no nest; the eggs were laid on the wood chips."

Typically, these eggs are a lengthened pyriform oval, when unblown and fresh, suffused with a delicate salmon pink hue, but when emptied of their contents, milk-white and generally highly glossed. They remind one much of those of the Great Spotted Woodpecker, but are always longer, though seldom broader, and often slightly narrower than the eggs of the European species. One or two of the eggs I possess are precisely of the size and shape of the White-rumped Woodpecker's, as figured by Bree. They are not unfrequently very obtuse at both ends.

The eggs vary in length from 1·0 to 1·2 inch, and in breadth from 0·77 to 0·85 inch; but the average of twenty eggs is 1·11 by 0·8 inch.

186.—*Vivia innominata, Burt.*

I have never found the nest of the Speckled Piculet. Mr. R. Thompson says: "They breed in April and May, in small holes in trees, usually in one of the thicker branches, which they excavate themselves.

"Very common at altitudes of 1,500 to 3,000 feet. This is a very interesting species, because of the numbers of individuals usually constituting a family; there are sometimes as many as seven young ones. I have seen as many. They are capital insect-hunters, and destroy vast quantities of the eggs and larvæ of xylophagous beetles."

Captain Unwin found a nest-hole in a dry Fir tree in the Agrore Valley on the 6th May 1871. It contained three transparent white eggs, which he sent me and which are the only ones I have yet obtained; they were laid on the bare wood of the hole.

These eggs are quite of the Woodpecker type; when blown, pure white and very glossy, with a thin fine shell; a delicate salmon pink, as Captain Unwin noted, when fresh and unblown, owing to the yolk showing through. They are very broad ovals, scarcely smaller at one end than the other.

They varied from 0·58 to 0·61 inch in length, and from 0·49 to 0·51 inch in breadth.

188.—*Yunx torquilla, Lin.*

I have no particulars as to the nidification of the Common Wry-neck *within* our limits, but Mr. Brooks says that it "breeds in the large orchard at Ramu, Cashmere, where it is not unfrequent."

191.—*Megalaima grandis,** *Gould nec Gmel.*

The Marshall's Barbet breeds in various parts of the Himalayas, at any rate from Bhotan to Cashmere, in deep shady dells in all the lower hills south of the first snowy range, at elevations of from 4,000 to 6,000 feet. It lays from the middle of May until the middle of July. Throughout the breeding season its loud wailing cry resounds in all the warmer well-wooded valleys.

The nest-holes excavated by the birds, alike in the trunks and larger branches of the softer-wooded trees, occur at heights of from 10 to 50 feet from the ground.

The *Alnus nepalensis and Acer oblongum* are in some parts of the hills their favourite trees. The holes are some 3 inches in diameter at the entrance, only a few inches deep, and 6 or 7 inches across, where the eggs are laid. Often they go straight into a natural hollow.

The normal number of the eggs is four, but I have a note of five being found.

According to Mr. Hodgson's notes, this species begins to lay in April in Nepal, excavating a nest-hole in the trunks or branches of trees 4 or 5 inches deep, and laying three or four eggs, which are figured as pure white, and as measuring 1·35 by 0·98 inch; it is added that this species breeds only once a year.

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* Up till quite recently this species was considered to be identical with the Chinese bird, *virens*, Bodd; Swinhoe pointed out that the Indian race was distinct, and named it "*Marshallorum.*" This name, however, cannot stand, because Gould figured and described it as *grandis;* and though it is not Gmelin's *grandis*, still as this latter disappears as a synonyme the species must stand as *grandis*, Gould, the earliest, unoccupied name bestowed upon it.

He further notes as follows: "May 20th, in a deep ravine descending from the heights of the Shahpooree forests, I obtained a female and nest in the decayed trunk of a large tree, or rather I found the hollow which served as nest-hole. This is similar to that of the smaller green species (*M. Hodgsoni*), and the eggs are white like those of that species but larger."

Mr. R. Thompson writes:—

"This Barbet usually rears from three to four young ones. Fruit is its only food as far as I know. It is easily tamed, and, when caged, often utters its loud and plaintive cry. The hillmen have a story, that a person who suffered unjustly from law-suits and who died from grief in consequence was transformed into this bird, of which the cry is *un-nee, ow; un-nee, ow;* meaning injustice, injustice."

Writing from Murree, Captain C. H. T. Marshall remarks that this species "lays in the latter end of June and beginning of July; the eggs are four in number, pure white, and 1·4 by 1 inch. Most of the nests were in newly-made holes, in horse-chestnut trees, some 20 or 30 feet from the ground. Elevation averaging 6,000 feet."

The eggs vary a good deal in shape; typically they are somewhat lengthened ovals, regular and somewhat obtuse at both ends, but much elongated; comparatively broad, and somewhat pyriform varieties occur. They are a dull pure white, with little gloss, as compared with those of Woodpeckers'.

They vary in length from 1·25 to 1·48 inch, and from 0·89 to 1·05 inch; but the average of eleven eggs measured is 1·37 by 0·98 inch.

192.—*Megalaima Hodgsoni, Bonap.*

According to Mr. Hodgson's notes, this species (Hodgson's Barbet) breeds in the valleys of the lower regions of Nepal. It begins to lay about April, and the young are ready to fly by June or July. It excavates a deep hole, some 16 inches in depth, in the trunk of some decayed tree, and lays three or four pure white eggs, which are figured as broad ovals, considerably pointed towards one end, and measuring 1·3 by 0·98 inch.

193.—*Megalaima caniceps, Frankl.*

Franklin's Green Barbet breeds in richly-wooded, well-watered districts, especially in the neighbourhood of hilly ground or hills, finding its way up into the valleys of these to an elevation of some 2,000 or 3,000 feet, at any rate, all over Continental, as opposed to Peninsular, India. It lays in March and April; at Bareilly I obtained fully-fledged young ones by the 20th of May, and Dr. King, writing from Mount Aboo, says he obtained them there on the 25th of that month.

Three or four is the usual number of eggs found, and these appear to be laid very irregularly, as quite hard-set and almost fresh ones are found in the same nest-hole. These latter, so far as I know, are always excavated by the birds themselves in the trunk or one of the larger branches of some soft-wooded tree, such as the Siris. In Bareilly we found no nest-hole at a less height than 20 feet, and one was at least 50 feet from the ground.

There is of course no real nest, the eggs being laid on the bottom of the hole amongst a few chips. The hole is comparatively small, not above 5 inches in diameter at bottom, from 6 inches to 2 feet deep, and the passage, which is very neatly cut and rounded, and nicely bevelled off at the entrance, is only about 2½ inches in diameter.

The late Captain Beavan mentions that in Maunbhoom this species breeds towards the end of March and that at the beginning of April two young birds and an addled egg were brought him. In Upper India it does not, I think, begin laying until April.

The eggs are somewhat elongated, very regular ovals, dull white, and slightly glossy.

193 bis.—*Megalaima zeylonica, Gmel.*

I know nothing of the nidification of the Ceylon Green Barbet, but Mr. Layard says :—

" This Barbet breeds in hollow trees, laying three or four pure white, but very shining eggs; axis 1·1, diameter ·95. The natives all affirm that the birds hollow out their own nest hole; one I saw was in an unsound tree, the nest slightly formed of a few bents of dug grass."

I think this requires confirmation. Barbets do not, as a rule, lay, (1st) *very shining*, (2nd) nearly spherical eggs, nor (3rd) do they make any nest, but it was Layard who described the Roller's eggs as greenish, profusely spotted with dark brown !

194.—*Megalaima viridis, Bodd.*

I have never taken the eggs of the Small Green Barbet, but Mr. Davison tells me that it " breeds very commonly on the Nilghiris in the trunk or larger branches of dry and partially decayed trees. Dr. Jerdon seems to question their excavating their own nests; but of this there can be no doubt, as I have repeatedly seen them at work. The holes vary considerably both with regard to the depth of the entrance tube, if it may be so called, and also with regard to the depth of the egg chamber. The hole is shaped something like a retort with a very short neck. The eggs are pure white, rather glossy, and generally nearly as thick at the smaller as at the larger end, but in this, as well as in size, they vary very considerably; the normal number of eggs is, I should say, four, but very often only three are laid, while occasionally even five are found. Nothing is used to line the hole, the eggs being merely laid on a few chips of decayed wood; the bird appears rather to sit over than on her eggs, as she may be seen for hours together with her head sticking out of the hole. Breeds in March, April and May, and sometimes continues laying even as late as the 1st or 2nd week in June."

The eggs of this species, sent me from the Nilghiris by Miss Cockburn and Mr. Davison, are dull, pure white, only moderately glossy, more or less broad ovals.

None of the eggs I have seen are at all of the elongated shape which characterises the eggs of *Xantholæma hæmacephala.*

They vary in length from 1·07 to 1·22 inch, and in breadth from 0·8 to 0·96 inch, but they average 1·1 by 30·86 inch.

195.—*Cyanops asiatica, Lath.*

Mr. R. Thompson says: "The Blue-throated Barbet breeds in April and May, digging out holes in the decayed branches of trees.

"It is a common breeder in our Kumaon forests, keeping *entirely* to the hilly regions. 'Kuttooruk, kuttooruk, kuttooruk' is its cry."

Mr. Blyth tells us that in Lower Bengal it has two broods, one in the month of May, the other in November, (Journal, As. Soc., X., 655).

Captain G. Marshall says that his shikaree found a nest hole in Kalsi Grove (Dehra Doon): "The entrance was on the under side of a bough about 15 inches in girth and near the top of the tree. The hole was circular and about 10 inches in depth."

196.—*Cyanops Franklinii, Blyth.*

According to Mr. Hodgson's notes, this species, the Golden-throated Barbet, also begins to lay in April, breeding in holes in trees in the central hills of Nepal and Sikhim and in the Terai. The nest hole is about 10 or 12 inches in depth; the eggs, three to four in number, are pure white, and one that is figured measures 1·1 by 0·85 inch; a broad regular oval.

197.—*Xantholæma hæmacephala, Müll.*

I have always found the nest of the Coppersmith or, as Jerdon pleases to call it, the Crimson-breasted Barbet, in March, April or May; but in Central and Southern India it begins, I believe, to lay earlier.

Sometimes it fixes upon a branch, hollow from end to end and with a wide natural aperture, but in these cases it generally cuts a new entrance, nearer to the bottom of the cavity, some 2 inches in diameter, and always, I think, on the under side of the bough. As a rule, however, like others of the family, these barbets seen to be able to find out branches that are decayed internally, although externally to the human eye exhibiting no signs of this, and into such, through the harder external shell of the branch, they cut a perfectly circular hole with the edges neatly bevelled off inside and out. The eggs are at the bottom of the cavity into which they have thus bored (and which they smooth a good deal interiorly) often a couple of feet below the *door*, and laid merely on the chips produced in the course of the work.

The normal number of the eggs is four, but I have not unfrequently found only three hard-set ones or newly fledged young birds.

The hole varies in length from 1 to 4 or 5 feet, and the diameter of the chamber, when, as sometimes happens, this is cut entirely by themselves in sound though soft wood, scarcely exceeds 4 inches. The birds often use the same hole year after year, but generally lengthen it each season. Captain G. F. L. Marshall, writing from Saharunpoor, says that "these birds breed in the beginning of March, and lay generally three clear white cylindrical eggs in a hole in a tree, which it usually cuts out for itself in a Bukain tree or some other soft wood. I saw one nest in a sound branch of a Peach tree, the girth of the branch was only 13 inches and the whole heart of it was cut out to a depth of 16 inches; at the bottom of the hole were the eggs; the parent bird would not come out, even though I shook the branch violently, and it picked viciously at anything put to the mouth of the hole, remaining just inside the entrance."

The late Captain Beavan tells us that this species: "breeds in Maunbhoom at the beginning of April. The eggs are generally three in number, white, and much elongated; length, 1 inch; greatest breadth ·62 inch.

"A bough was brought to me which it had excavated and formed into a nest; length of the hole from aperture to bottom was 7 inches, and its diameter about 3. There was no nest at the bottom, the eggs being laid on the wood, which was hollowed out in an oval shape. It seems always to select the *underside* of a bough to commence operation on."

Mr. F. R. Blewitt remarks (writing from the Central Provinces) :—

"With this species the period of nidification is from about the middle of January to end of March or early part of April. The most suitable hollow in any description of tree is selected for the nest-hole. If it has a preference at all, it is certainly for the Neem tree, in the decayed and hollow branches of which I have discovered the greater number of nests. In several instances I noticed that the parent birds, for more secure and ready ingress and egress to the nest, had picked small circular holes through the bark and wood of the branch, selecting always its underpart for the new entrances. The eggs are invariably deposited on the bare wood, and as on one occasion, I found, in a nest in the hollow branch of a large Peepul tree, four very young birds, I believe four to be the maximum number of the eggs. I was once witness, during the breeding season, of a singular contest between two male barbets for the possession of an old nest in the decayed branch of a Neem tree, which each claimed. A short struggle took place at the entry hole, when they deliberately flew to and sat on a near branch, faced about, and desperately pecked each other for near two minutes, when they closed and fell to the ground. Twice again did they return to the branch and renew the contest, with the same result. In the fourth attempt, however, to reach the branch, the weaker bird, from exhaustion, failed to do so; it then flew and perched on a low bamboo frame-work. The other immediately followed, and in the renewed contest seized his antagonist firmly by the beak, shook him off the bamboo and kept him suspended (by the beak) for near a minute, when both fell to the ground. The weaker bird, exhausted as he was by the prolonged fight, recovered himself slowly and flew away, while the victor returned to the nest. I have taken the eggs both in the Sumbulpore and Raepore Districts."

Writing from Sambhur Mr. R. M. Adam remarks :—

"The Crimson-breasted Barbet is very common about all the gardens here. It breeds about April and May. The young birds have the yellow on the throat, and about the eyes very pale; there is no red on the breast, and the whole of the head and neck is a dull green.

"I once found a nest of this bird in a Mango tree in North Behar on the 21st of March."

A vast number of notes, which I cannot here reproduce, have been sent me anent the nidification of this species, but this account would not be complete without Dr. Jerdon's. He says: "A pair bred in my garden at Saugor, in the cross-beam of a vinery. The entrance was from the underside of the beam, perfectly circular. It appeared to have been used for several years; and the bird had gone on lengthening the cavity inside, year by year, till the distance from the original entrance was 4 or 5 feet; and it had then made another entrance, also from below, about 2½ feet from the nest. I quite recently observed a nest of this bird in a hole of a decayed branch of a tree, close to a house in a large thoroughfare in Calcutta."

The long, narrow, pure white egg of this species, whose fragile shell has rarely much, and is often devoid of *all* gloss, reminds one much of those of our Common Indian Swift, *C. affinis*. Typically the eggs are almost cylindrical, tapering somewhat towards one end, but the ends themselves are broad and obtuse, and no tendency to point is observable. They vary, however, much in size, and within certain limits in shape also. Here and there a tolerably perfect oval may be met with, and a slightly pyriform variety is occasionally obtained. When fresh and unblown, like so many eggs of this type, they have a delicate pink blush.

In length they vary from 0·87 to 1·07 inch, and in breadth from 0·62 to 0·72 inch, but the average of a very large series is 0·99 by 0·69 inch.

199.—*Cuculus canorus, Lin.*

The Common Cuckoo breeds with us, so far as I know, only in the Himalayas, though Mr. F. R. Blewitt is of opinion that it must breed occasionlaly in the hilly forest tracts of the Central Provinces, as he has met with it there, during every month of the year.

It lays during the latter half of May and the first half of June, selecting the nests of Pipits, *Heterura sylvana* and *Agrodroma Jerdoni*, Stone-chats, *Pratincola indica*, *P. ferrea*, and *P. caprata*, *Copsychus saularis* and doubtless many other species.

Captain Cock writes to me that this species is "very common at Dhurmsala during May; it usually makes its appearance in April, and, I fancy, as soon as it has finished laying, departs. The nest of *Pratincola caprata* is the one that is generally selected to lay the egg in, although on one occasion I found a young one in the nest of a *Malacocircus*. I have taken four eggs at different times from the nests of *P. caprata*. I was for a long time uncertain what cuckoo the eggs belonged to, till I found a young cuckoo and three addled eggs belonging to *P. caprata* in the same nest, and I watched the old cock and hen *Pratincola* feeding the young one which was an undoubted *C. canorus*. It is remarkable that *P. caprata's* nest should be selected, as it generally builds on a bank or under a stone, always on the ground, and although some *C. canorus'* eggs are somewhat like *P. caprata's*, yet there is a great difference in the size, and one would think that the female cuckoo would have some difficulty in getting into the small hole in which the nest is generally placed. But the

Malacocirci are not common up here at all, and I could not be quite sure that the young cuckoo I found in the *Malacocirci's* nest was *C. canorus*, though it most probably was. I believe the *Malacocirci* usually have the credit of bringing up the young cuckoos. On one occasion I found a cuckoo's egg in the nest of *Lanius erythronotus*, but this was not the egg of *C. canorus*, and I have always thought it must be the egg of *C. himalayensis*, as it is a slightly smaller egg than that of *canorus*. Eggs always found in May; last egg taken on 29th May 1869; found a young fledged cuckoo on 30th May 1869."

I myself see no difficulty about getting the eggs into the nest. Only two years ago, I shot a female cuckoo, with an egg in her mouth, and though the egg was smashed, I have seen enough cuckoo's eggs since then to be pretty sure it was her own egg, and I fully believe, though it seems to be considered fabulous at home, that the cuckoo does at times carry her egg in her mouth after laying it. Again I have taken an egg of *Coccystes jacobinus* out of a domed nest of *Munia malabarica*, into which the parent bird could, at most, have only got her head and neck.

Mr. Brooks says: "Common all over the district around Almorah when the country is open. I have one egg taken from a nest of *Pratincola indica* at Almorah, another from a nest of *Copsychus saularis*. They lay in Kumaon, 18th May."

I myself obtained two specimens in nests of *Heterura sylvana* on the 9th and 11th June, near Kotegurh.

Captain C. H. T. Marshall writing from Murree tells us: "We found the eggs of this bird in the nests of *Pratincola ferrea* and *Agrodroma griseo-rufescens*." (*Jerdoni*, Finsch.)

Mr. R. Thompson says: "Lays in May and June; I have found one or two young birds in the nests of Pipits at Almorah some years ago. In July the young birds are well on the wing, and betake themselves to lofty trees, and begin their migrations south forthwith."

The two eggs sent me by Captain Cock as belonging to the Common Cuckoo are in shape somewhat elongated ovals, slightly compressed towards one end. In texture the shell is fine and compact, but with scarcely any gloss. The ground color is nearly pure white, and the egg is finely spotted and delicately streaked and speckled with a somewhat pale yellowish brown and faint purple, the markings being pretty thick towards the large end, but somewhat sparse over the rest of the egg. An egg obtained by Captain Blair at Kotegurh is precisely similar, but has the ground color faintly tinged with pink.

The eggs vary, as is well known, to a remarkable extent both in size and coloring. Of two others which I myself obtained I have noted: "Of one, the ground is pure white and glossless, thinly freckled and streaked with brownish red and pale purple. The other has a pinkish, stone-colored, somewhat glossy ground, mottled and freckled with dull slightly-brownish red."

In length the eggs vary from 0·88 to 0·95 inch, and in breadth from 0·68 to 0·73 inch.

200.—*Cuculus striatus, Drapiez.*

This species, the Asiatic Cuckoo, (the *C. himalayanus*, Vigors *apud* Jerdon) lays during June, and only I believe in the Himalayas within our limits, though its wanderings are extended far and wide, and I have myself quite recently shot it in the southern group of the Nicobars.

I have never taken the eggs, but have obtained the young in company with *Trochalopteron lineatum*, the species that most commonly officiates as foster parents for this cuckoo.

Writing from Mussoorie, Capt. Hutton says: "The natives have an idea that this bird builds its own nest and rears its young itself; this is erroneous, but it evidently arises from the curious fact that, when the young bird is old enough to leave the nest, the foster parents feed it no longer, and it is then supplied by the old cuckoo, or at all events by one of the same species. This I have myself repeatedly witnessed, and think it not improbable that others of the cuckoo tribe may do the same thing, for it seems almost incredible that *Trochalopteron lineatum*, in whose nest the egg of *C. striatus* is often dropped, could supply so voracious a bird after it had left the nest, neither could the little hedge sparrows of England do so for the young of *Cuculus canorus*. At Jeripanee, below Mussoorie, I have seen the young cuckoo sitting for hours together on a branch waiting for the return of the adult bird, which continued every now and then to bring supplies of caterpillars wherewith to satisfy the apparently insatiable appetite of the nestling, until at last both would fly off to another spot. To satisfy myself that it was really this cuckoo that fed the young, I shot one in the very act and found it to be no other than our summer visitant, *Cuculus striatus*."

One egg taken out of a female bird of this species (which he shot at Ruttun Pir, Cashmir on the 17th June) by Mr. Brooks, is a very perfect elongated oval, a shade narrower at one end. The ground color is pure white with a slight gloss. The markings, which are everywhere very sparse, are somewhat most numerous towards the larger end, and consist of minute specks and tiny lines not more than 0·05 inch in length, of dingy olive brown and very pale inky purple or purplish grey.

The egg measures 0·89 by 0·6 inch.

201.—*Cuculus poliocephalus, Lath.*

Nothing certain is known of the eggs of this species, the Hoary-headed Cuckoo. Mr. R. Thompson says it lays in May and June, and that he has killed old and young birds together in July.

An egg, believed to belong to this species, was taken by Mr. Brooks out of a nest of *Reguloides superciliosus* at Goolmerg, Cashmere, on the 2nd of June. It is an elongated, cylindrically ovate egg, nearly the same size at both ends, which are both obtuse; pure white and glossy. The nest contained three of the eggs of *R. superciliosus*, which are only about half the size of this egg, almost glossless, and richly spotted with red.

The egg measures 0·81 by 0·57 inch.

207.—*Hierococcyx sparveroides, Vig.*

A single egg of the Larger Hawk-Cuckoo, brought me from the Nilghiris by Mr. Davidson, is a perfectly pure white, moderately glossy, and very like the eggs of *Coracias indica*; his authority was Mr. R. H. Morgan of the Madras Forest Department, who averred that he had watched the bird build the nest and had then taken the eggs, of which four were laid. If there be no mistake about this egg, the fact that the Hawk-Cuckoos build their own nests is interesting.

The egg measures 1·39 by 1·05 inch.

Mr. Hodgson's M.SS. however tell a very different story; his notes are to the following effect:—"This species occurs both in the hills and plains; in March or April they arrive in the central hills, and remain till about August when they begin to descend the hills, rarely more than a pair is seen together. They may very often be seen sitting on the naked branch of a tree darting at any passing insect, seizing it in their bills and returning to their perch to devour it. Sometimes they descend to the ground in search of insects, soon however returning to the branch. When the breeding season arrives in March and April, the pair may often be seen seated upon some high branch, repeating continually their loud call (chuck dol-dol) or again uttering a note like that of the Koël, or another cry which exactly resembles the cough of a human being. These varied cries are continually repeated not only during the day, but also during parts of the night, until the end of June or the early part of July. Then they steal and devour the eggs out of the nests of other birds, laying their own instead, which these other birds duly incubate; thus quite recently a *Trochalopteron chrysopterum* was observed feeding a bird of this species which must have been nearly a year old, and again we obtained another young one about two months old in the act of being fed by a male *Actinodura nepalensis*."

208.—*Ololygon passerinus, Vahl.*

Miss Cockburn, the only person, so far as I know, who has secured the eggs of the Indian Plaintive Cuckoo, gives me the following note on the subject (she writes, I may add, from the Nilghiris):—

"I have long been unable to find the eggs of this bird, and thought it most likely that it did not breed on these hills. At last, on the 17th September 1870, the nest of a Common Wren Warbler (*Drymoipus inornatus*) was found, which had two small eggs, and a third which was much *larger*, but of something the *same colour*. A few hours after another Common Wren Warbler's nest was found, which also contained two small eggs (one of which was *broken*) and a large egg. These two nests were not far from each other; I took them both. On the 22nd September, another nest of the same Warblers was found, which also contained a large egg and two small ones.

"The same day, one of my servants, seeing a Plaintive Cuckoo sit very quietly on a hedge, shot it. On examination it was found to contain an egg *ready* to be laid, of the *same colour* and *spots* as those found in the Common Wren Warbler's nests!! The egg was unfortunately broken, but the pieces were sufficient to identify those found in the little Warbler's nests. On the 26th September a Common Wren Warbler's nest was found, which had only a Cuckoo's egg in it. The Cuckoo was seen near the nest, and the little Warblers in a great fright (for the appearance and flight of the Plaintive Cuckoo very much resembles that of a small Hawk); on looking into the nest, there was the egg.

It was left for two or three days, but on going to the spot again, the nest was found to be deserted, so the Cuckoo's egg was brought away.

"On the 5th October 1870, another Common Wren Warbler's nest was found, but this time it was occupied by a *young* Plaintive Cuckoo, which entirely filled the wee nest, and had the boldness to pick at my finger every time I tried to touch it. The nest had no young Wren Warblers. Whether the young Cuckoo had pushed the little Warblers out, or whether no other egg except the Cuckoo's was hatched, it is impossible to say. I regret not having seen the nest till at this stage of the young Cuckoo's existence. A week after it had left the nest, but was caught among the bushes close by. Considering the smallness of a Common Wren Warbler's nest, and one of the Warbler's eggs having been found *broken* in one of the nests, as mentioned above, there can I think be little doubt but that this bird, like its European namesake, must carry her egg in her mouth and drop it into the nest.

"The mouth of the Plaintive Cuckoo always struck me as being uncommonly *large* for the size of the bird. When opened it is of a beautiful orange colour."

Mr. Adam remarks:—

"Miss Cockburn's interesting note on the breeding of this species fully explains what I thought at the time to be a case of fraud on the part of some of our native fellow-subjects. Towards the end of September 1866, when in Lucknow, I had small boys collecting nests for me, and on two occasions nests of *Drymoipus terricolor*, Hume, were brought to me containing an egg somewhat like that of *Drymoipus terricolor*, but much larger, in fact exactly like that described and sent by Miss Cockburn. I accused the boys of having taken the eggs from some other nests, but they maintained that they had not done so. I did not believe them *then*, but I do *now*."

Mr. R. Thompson says:—

"In the Dehra Doon I have found the young one in a nest of the *Pyctoris sinensis*. On another occasion I found a young one in the nest of *Lauius erythronotus*. It is a common breeder in these parts and breeds here in May and June."

The eggs of this species (one of them, a broken one, taken from the oviduct of the female), which I owe to Miss Cockburn of Kotagherry (Nilghiris), are elongated ovals, occasionally more or less cylindrical. The shell is very fine and smooth and is fairly glossy. The ground colour is a delicate pale, greenish blue, blotched and spotted boldly but sparsely, and almost exclusively towards the large end of the egg, with reddish or purplish brown and pale reddish purple. The markings seem generally to form a very imperfect and irregular, but still, more or less conspicuous zone, round the large end.

The eggs vary from 0·78 to 0·81 inch in length, and from 0·53 to 0·57 inch in width.

212.—*Coccystes jacobinus*, *Bodd.*

Our Indian Crested Pied Cuckoo lays, in the plains of India and the lower ranges of the Himalayas, during the latter half of June, July and August. From Pind Dadun Khan to Tipperah, and from Dehra Doon to Salem, the season seems to be the same, but in the Nilghiris the various Babblers, in whose nests this species deposits its eggs, breed in January, February and March, and there this Cuckoo also seems to lay in those months. Mr. R. Thompson writes: "In Dehra Doon this species is very common, and lays in July and

August in the nests of the *Malacocirci,* whom I have constantly watched later in the year feeding the young of this species. I have seen it in Gurhwal during the breeding season, but it is not common there."

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadun Khan and Katas in the Salt Range :—" Lay in August ; eggs, one only ; shape, blunt oval ; size, 0·91 inch by 0·81 inch ; colour, deep greenish blue. This evidently parasitical egg was taken from the nest of *Malacocircus caudatus* containing four ordinary eggs which it closely resembles in colour, though its form indicates its parasitical character."

Mr. A. G. R. Theobald, writing from Aptoor, Salem District, says he took an egg out of the oviduct of a female on the 18th August.

The only species in whose nests I have myself known the eggs of this Cuckoo ever to occur, are *Malacocircus Malcomi, M. terricolor, Chatarrhæa caudata,* and *C. Earlii,* and by far the most frequently in those of the former.

From Kotagherry Miss Cockburn remarks : " On the Nilghiris it appears to be exclusively in the nests of the large Grey Babbler (*A. Malcolmi*) and of our Common Laughing Thrush (*T. Cachinnans*) that the Pied Crested Cuckoo deposits its two greenish blue eggs."

As a rule, the young cuckoo is the only bird that the foster parents rear ; numbers of times I have seen a pair of *Malcomi* in careful attendance on a ravenous and clamorous young Cuckoo, but never with any young of their own in company with it. And yet one always finds three or four of the Babbler's eggs along with the Cuckoo's, showing that it is not the parent Cuckoo, in this case that gets rid of the eggs to make room for her own. It is probably the young Cuckoo that ousts his nest-fellows.

Mr. R. M. Adam says :—

" On the 13th August I observed in a garden in Agra two young birds of this species—which had apparently just left the nest—being fed by a *Malacocircus Malcomi.* There was also a young *Malcomi* with the party."

The eggs of this species are well fitted for deposit in the nests of the various species of *Malacocircus,* usually chosen as foster parents for its young by the Pied Crested Cuckoo. In colour they are a spotless blue, darker or lighter in different specimens ; but all are highly glossy and closely resemble the eggs of *Chatarrhæa caudata,* in whose nest also this bird occasionally deposits its eggs. Even from the eggs of *Malacocircus Malcomi,* in whose nest they are in Upper India most commonly found, it is only by their somewhat diminutive size and very round oval shape that they can be distinguished. This babbler itself, however, sometimes, I am inclined to believe, lays abnormally small eggs of this shape ; so that the only specimens that I really fully rely on are those which have been taken out of the oviduct of the female : these are very round ovals, recalling in shape the eggs of the bee-eaters, very glossy and of a delicate full-sky blue ; those obtained from the nests to and from which the bird had been watched are exactly similar, but of a somewhat darker and deeper hue

The eggs vary in length from 0·9 to 0·98 inch, and in breadth from 0·72 to 0·82 inch ; but the average of a series is 0·94 by 0·73 inch.

213.—*Coccystes coromandus, Lin.*

The only egg that I possess of the Red-winged Crested Cuckoo was obtained for me by my friend, the late Mr. Irwin, in Tipperah. It was extracted from the oviduct of the female. In shape it is a very broad oval, and in texture fine and glossy. In colour it is a moderately pale, somewhat greenish blue, uniform throughout, without any specks or spots; although considerably larger, it in other respects closely resembles some eggs of *C. jacobinus*.

It measures 1·05 by 0·92 inch.

214.—*Eudynamys honorata, Lin.*

The great majority of the Coëls lay in June; but I have obtained their eggs both in May and July. With one single exception, when I obtained an egg from the nest of *Corvus culminatus*, every one of the fifty odd eggs that I have taken or received at different times have been found in nests of *Corvus impudicus*.

Mr. Blyth recorded the following remarks in regard to the eggs of this species:—

" The female appears to deposit her eggs invariably in the nests of the true *Corvi*, and so abundantly that we have known five or six Coëls' eggs to be brought in together by a person who had been destroying Crows' nests, each taken from a different one. The egg is certainly so often found alone that there can be little doubt that the Coël destroys the eggs of the Crow at the time her own is deposited; but it is doubtful whether the young Coël is endowed with the instinct of ejecting any companions it may have, and it would seem that it has not that propensity; but the fact remains to be systematically observed. Mr. Frith informs us that he has never found more than one Coël's egg in a nest, and in his long experience has only met with it in those of the two Indian Crows.

" The egg of the Coël measures generally 1¼ inch long; sometimes in more rotund specimens than usual, little more than 1 inch by ¾ to ⅞ inch where broadest, having ordinarily the small end well distinguished, and indeed much resembling in size and form the egg of *Dendrocitta rufa*, but of a considerably deeper colour; still it is of a pallid olive green of different shades, marked all over with numerous reddish dusky spots, much as in some Blackbird's eggs, which are more numerous, in some much more numerous towards the large end, where they incline to form a zone; and, notwithstanding the difference of ground colour from the egg of *Cuculus canorus*, there are few acquainted with the latter who would not at once suggest the Coël's to be a cuculine egg of some kind, from a certain resemblance in its appearance to the Cuckoo's egg which at once strikes the observer."

My experience differs in some important particulars from Mr. Blyth's. In the first place, I deny that the Coël's eggs are generally found alone; in thirty cases of which I have notes there is no single instance of the egg being found alone. It is not the eggs that are destroyed, but the young Crows that are got rid of, probably by the young Cuckoo; I have found the latter in a nest with three young Crows, all freshly hatched, and a week later have found the young Crows "missing" and the young Cuckoo thriving. In the next place, I have repeatedly found two Coël's eggs in one nest.

Mr. Brooks remarks—

" *Eudynamys orientalis* lays its eggs in the nest of the common Crow, *Corvus splendens*. I have found two eggs in the same nest. They are one-third smaller than the crow's eggs, more oval, of an oil-green ground color, with brown spots thickly marked over the egg and more numerous at the large end."

Mr. W. Theobald makes the following remarks on the breeding of this bird in Monghyr:—"Lays in the third week of June. Eggs, one only; shape, ovato pyriform; size, 1·2 inch by 0·9 inch; colour, pale dirty green, much blotched with reddish brown. Had but one egg brought, and the man reported four Crow's eggs in the same nest."

Elsewhere I have said, writing from Bareilly: "As we stood waiting for the eggs of the King-crow to be brought us, a speckled female Coël suddenly emerged from a group of Mango trees in our own compound, pursued by several Crows. The Coël is a parasitic Cuckoo, famous in Indian song as the harbinger of that glad rainy season, when, to quote the Indian poet, the sun-parched widowed earth puts off her withered, dust-soiled weeds, and, soon to become the joyful mother of autmun's harvests, dons a fresh bridal robe of green. Throughout the rains the loud whistled cry, "who are you?" rings through every copse, and the Coël has from very early times been as great a favourite with the people of Hindustan as ever the Cuckoo was with us. When we came to inspect the clump of Mango trees out of which the angry Crows had come, we found in them no less than seven of their nests, and in two of these discovered unmistakeable eggs of the Coël. Did these two both belong to the fugitive female discovered when for the third time she made the attempt? Were they the eggs of sister adventuresses, who had put her up to the locality as one in which business was likely to be done? I confess I am not deep enough in the secrets of the mottled ladies, whom respectable Crow matrons doubtless look upon as the worst of 'social evils,' to answer these questions, *but* about the eggs there could be 'no deception.' Of these eggs, the one had a pale olive green ground, thickly blotched and spotted with two shades of brown, the one being somewhat purplish, the other yellowish. The blotches and spots were entirely confluent at the large end. Of the other, the ground colour was a pale sea-green, pretty thickly blotched and spotted with olive brown; some of the spots and blotches being much fainter and having an almost purplish tinge. Most of the blotches were gathered into a very broad, irregular, ill-defined zone round the large end. These were typical eggs, and none of the thirteen that I have procured during the past fortnight differed much from one or other of these."

One curious fact remains to be noticed. I have never seen Crows feeding fully fledged Coëls out of the nest, whereas I have repeatedly watched adult female Coël's feeding young ones of their own species. I am pretty nearly convinced that after laying their eggs the females keep somewhere about the locality and take charge of the young directly they can leave the nest; but the difficulty is that, while from dissection I am convinced that they lay more than one egg, I never saw more than one young one in charge of an old female. Common as the bird is, and much attention as I have paid to their habits during the breeding season, there is much still to be ascertained in regard to their social economy.

Mr. A. Anderson says that Dr. Jerdon "is correct in stating that the nest of the common Crow (*Corvus splendens*) is the one almost exclusively used as a nursery for the foundlings, this however, not because the Coël can be said to have any partiality for this Crow in particular, but because the other species (*C. culminatus*) does not lay simultaneously with herself. I firmly believe that if both species nested at the same time, they would be equally in demand as foster parents. (*C. culminatus*) lays, as a rule, in February and March; and I have sometimes, though rarely, seen them do so as late as May and

June; *C. splendens,* on the other hand, does not generally commence to build till June, which suits the Coël to a nicety".

On the 27th May he found a nest containing "three Coëls and four eggs of *C. culminatus.* This nest was built in a tree at my garden gate, and was watched by me in course of construction. I frequently observed male and female Coëls darting in and out of this shady tree, and during the heat of the day sitting in close proximity to, and on terms of perfect friendship with, the rightful occupants of the nest. On the 24th May the nest contained one Crow's and one Coël's egg; on the 25th I was agreeably surprized at finding that each species had laid a second egg; but on the following day, the 26th, I was amazed when my tree-climber from aloft reported that both birds had again done their duty. On the 27th I removed the contents of the nest, which contained the number above stated. The Crow on this occasion was on her nest, and the man who went up informed me that one of the small eggs (meaning the Coël's) was placed above the other six, forming as it were the corner tier.

"I would observe that the fact of *C. culminatus* laying in May was as exceptionally late for that bird as it was early for the Coël. I am consequently led to infer that these three Coël's eggs were the produce of one bird.

"It is quite clear that *C. culminatus* is easily imposed upon, and seems to be alike unaware of, and indifferent to the deception practised on her; for I never once observed the above pair attempt to drive away the Coëls from the tree on which they had built. *C. splendens,* on the other hand, is thoroughly alive to the trickery; and there is hardly a day, during the breeding season, that Coëls may not be seen making their escape from trees, hotly and unrelentingly pursued by one or more Crows of this species.

"But the curious thing in connexion is that the *male* Coël is just as often the object of attack as the female; and I have frequently observed both sexes flying out of the same tree simultaneously, though in opposite directions."

He concludes from the instance above given and eleven others in which, between the 8th June and the 28th August, he found one, two, or three eggs or young of Coëls, along with eggs, or young of Crows "that the same Coël may lay a number of its eggs in the same nest.

"That she does not *willingly* eject the eggs of the foster parent; and that when there is a deficiency in the normal number, it is in all probability due to *accident,* owing to the Coël's hurried movements.

"That *C. culminatus* is easily duped, while her cunning congener, *C. splendens,* is fully aware of the deception. That when the female Coël is about to intrude her egg, she is frequently accompanied by a male bird.

"That it is a common occurrence to find several Coël's eggs, as well as young ones, in the same nest, the produce of one or more parents.

"The eggs of this Cuckoo have certainly a very corvine appearance, and are well adapted to represent miniature eggs of the foster parent. All those in my collection are of one type, and may be described as thickly blotched and spotted with reddish-brown on a dark-green ground, somewhat confluent at the obtuse end. They vary, however, in size and shape, the longest measuring 1·4 by ·9 inch, the smallest 1·1 by ·9 inch. Five generally, and, perhaps, sometimes six, is the number of eggs laid by this bird."

I can only say that three Coël's and four Crow's eggs out of one nest, was a very remarkable find.

To return to Mr. Blyth's remarks, the eggs are *not at all,* in my opinion, of a cuculine type, and their general appearance, I really think, more closely resembles that of the Turn-stone as figured by Hewitson, (for I have never seen the egg itself), than any other European egg which I know, or of which I have seen a figure. They are much about the size of a common Blackbird's egg, but more compressed towards the small end, and I have seen what I was informed was a variety of the Ring-ouzel's egg, by no means unlike a specimen I possess of the Coël's egg. The texture of the egg shells is very compact and fine, but they are entirely devoid of gloss. There is some faint general resemblance between their ground colour and that of the eggs of *Corvus impudicus,* in whose nest they are in Upper India almost exclusively deposited, but I never saw a single egg of this Crow that could for one instant be mistaken for that of the Coël. The ground colour varies much: pale sea-green, pale dingy green, dull olive green, pale olive brown, and dingy stone colour, are all met with. The markings, specks, spots, streaks, and clouds, the predominant character being streaky, vary alike in extent and in shade and intensity of colour. The markings are almost invariably most numerous towards the large end, where they often form an irregular imperfect zone, or sometimes a mottled cap; but while in some eggs the markings are almost exclusively confined to the broader half, where they are but thinly sprinkled, in others they almost hide the ground colour throughout and are nearly confluent over the whole upper end. In colour the markings are olive brown, reddish brown, and dull purple; the reddish brown and purplish markings predominating on stone colour and dingy grounds, and the olive brown where the ground colours are brighter green. They vary little in shape or size, but are a moderately broad oval, somewhat compressed towards the smaller end.

The eggs vary in length from 1·14 to 1·26 inch, and in breadth from 0·89 to 0·96 inch, but the average of the series is 1·19 by 0·92 inch.

215.—*Zanclostomus tristis, Less.*

Dr. Jerdon says: "The eggs were brought to me at Darjeeling two in number, pure white, and of a long oval form. I did not see the nest, which was said to be a large mass of sticks and roots. I took another similar egg from the oviduct of a female which I shot." I have been unable to learn anything further of the nidification of the Long-tailed Malkoha.

217.—*Centropus rufipennis, Ill.*

The Common Coucal or Crow Pheasant breeds throughout the plains of Upper India during the rainy season. I have found eggs as early as the first of June and as late as the 5th September.

They build, most commonly, a huge, globular-domed nest, at varying heights from the ground, in the centre of thick thorny bushes or trees. The nests are usually of dry twigs, lined with a few green leaves, but all kinds of odds and ends are at times incorporated into the fabric.

Occasionally quite different materials are made use of, the nest consisting almost wholly of leaves, rushes or coarse grass.

The nests are hollow oblate spheroids, some 18 inches in external diameter, and 6 to 8 inches in height, with a large hole on one side, from the entrance of which to the back of the nest inside may be 12 inches. This of course is not long enough to admit the whole bird, so that when sitting the tail is commonly seen projecting outside the nest. When in this position the bird is about as defenceless as the traditional ostrich which hid its head in the sand, but in Australia the coucal (*C. phasianus*) manages these things far better. There, we are told :—

"The nest which is placed in the midst of a tuft of grass is of a large size, composed of dried grasses, and is of a domed form with two openings, through one of which the head of the female protrudes while sitting, and her tail through the other."

On the other hand, the Southern Chinese Coucal, which Swinhoe declares to be identical with ours, goes a step further and gets rid of the dome altogether. "I have never found," remarks Mr. Swinhoe, "the nest domed as is that of *C. viridis*. It is shaped like a long narrow basket, made almost entirely of fresh grass, suspended in the centre of a thick hedge, and usually contains four pure white eggs, ovate and not roundish as those of its small ally. This Crow-pheasant is a resident bird in South China, ranging a few hundred miles above Foochow, not quite so far north, I think, as Ningpo."

But even in India the nest is not always domed; I have seen fifty nests at least, and all were so, but my friend Mr. F. R. Blewitt, a most accurate observer, gives me the following note on the subject :—

"Breeds, as far as I have been able to ascertain, from June to August. My experience goes to prove that it does not *always*, as related by Jerdon, select 'dense and inaccessible thickets' for its nest. I have found it high up on tamarind and other trees fully exposed to view; the only difficulty was in getting to the nests, which generally were placed at the further end of a branch, between two or three forks. The nest is large in size, formed of various kinds of twigs and leaves of the Dhak, Jamoon, Siris, Neem, &c. No other material was used in the nests. The nest in structure is not always dome-shaped. Of six nests, two only were domed at the top, the other four, formed of twigs and leaves, were simply nests about the size of a very large round plate, with a depression in the centre for the eggs. I may add that the *thickness* at the base and sides, of the twigs and leaves which are both used in the building of the nest varies from 8 to 10 inches. I did not find more than three eggs in any one nest, though I have reason to believe that four is the maximum number. They are pure white and in shape oval. The exterior of the shell is as it were covered with a soft chalk-like substance, easily scratched with the nail."

Mr. W. Theobald makes the following remarks on the breeding of this bird in Monghyr :—"Lays in June and August; eggs, four in number, oval, measuring from 1·30 to 1·47 inches in length, and from 1·09 to 1·21 inch in breadth; colour, pure white: nest placed in dense trees, a neat but loose structure of twigs, domed, and with aperture in the side, lined with dried leaves."

Miss Cockburn, writing from the Nilghiris, says :—

"These birds build in large bramble thickets, so that their nests are not easily got at. They put a quantity of sticks together and form a very spacious nest, the materials being placed all round except at the entrance, and also forming a high canopy above much in the style of the English Magpie. It uses every precaution to ensure the preservation of its own progeny, as if it argued from its evil propensities that 'what birds have done, birds may do,' and that some day its own abode might be invaded by its numerous feathered neighbours towards whose domestic rights it has shown so little respect. The Black-and-Red Cuckoo builds in March and April, and the hen lays three large white eggs."

Dr. Jerdon states that "it makes a large nest of twigs, or grasses of green flag-leaves domed at the top, and the aperture on the side, and lined with dried leaves. It is usually placed in the most dense and inaccessible thickets. The eggs are two to five in number, pure white and oval. Burgess says that the exterior of the shell is very soft and of a chalky texture, easily getting scratched or stained. This, as Mr. Blyth remarks, shows an affinity to the eggs of *Crotophaga*, which are white, rough and chalky externally; but if this layer be detached, the egg is shewn to be deep blue. It breeds from January to July, according to the locality."

Three is certainly the normal number of the eggs, though four and even five are at times met with.

The eggs vary little in size or shape—broad regular ovals, almost perfectly symmetrical at both ends—they closely resemble, so far as size and shape goes, those of our Common Blue Pigeon *(C. intermedia)*. In texture they are rather coarse and somewhat chalky, and are normally of a dull pure white, but they are not unfrequently covered, when first found, with a pale yellowish brown glaze, or size, which readily washes off, but which, so long as it remains on them, imparts to them a certain amount of gloss.

One specimen from Tipperah, sent me by Mr. Irwin, is very nearly spherical and of a very pure white.

In length they vary from 1·3 to 1·55 inch, and in breadth from 1·12 to 1·25 inch, but the average of a large series is 1·44 by 1·16 inch.

217 bis.—*Centropus andamanensis, Tytler.*

The Andaman Coucal breeds (of course in the Andamans) during the latter part of the hot weather and the beginning of the rains. I have no detailed information as to its nidification, but Captain Wimberley who sent me two eggs, which he took in the neighbourhood of Port Blair, informs me that he took them in June, and that the nest was composed of sticks and placed in a tolerably high tree in secondary jungle. The eggs are of the usual Coucal type; hroad ovals, very obtuse at both ends; in color, a dull, much soiled, white, with very little gloss, and measuring 1·32 by 1·12 inch, and 1·33 by 1·1 inch.

218.—*Centropus bengalensis, Gm.*

Colonel Tytler in his Avifauna of Dacca tells us that he "obtained the nest and egg of this bird, (the Lesser Indian Coucal) during the month of June; the eggs are pure white and very round in formation. The nest, which was composed of straw and grass, resembled a large ball supported on sticks, with a hole in the side for the bird to enter; the nest was well concealed, and was with great difficulty discovered."

Dr. Jerdon says: "I have had the opportunity of seeing this species at Dacca, where it is certainly very abundant. I also obtained two nests, the one with two, the other with four white eggs. The nests were in both instances formed by the living grasses rudely bent down among the thorny twigs of a bush to form a seat for the eggs, and then continued upwards, forming a dome over the nest.

219.—*Taccocua Leschenaultii, Less.*

Miss Cockburn, writing from the Nilghiris, says: "This species, the Southern Sirkeer, is only found on the lower slopes of the Blue Mountains. I have obtained only one nest; this is large and consists of sticks put together much in the style of the Crow-pheasant's nest. As only two white eggs were found in the nest alluded to, I am not aware how many this bird lays. The nest was discovered in the month of March."

220.—*Taccocua sirkee, Gray.*

The Bengal Sirkeer lays from May to August, building a broad cup-shaped nest of twigs lined with green leaves, usually those of the tree on which it is built. It is said at times to build a dome-shaped nest, but I have never met with any of this form. It does not seem to have any choice as to the kind of tree, nor does it affect, like the Coucal, thorny species, but it selects, as a rule, some well concealed and little frequented locality. The nest is placed in some foliage-shrouded fork, sometimes only a few feet from the ground, and never according to my experience at any great height. In fact, I think, it never chooses *large* trees, but always low, thick ones, or even bushes. Three I take to be the normal number of the eggs; at least I have never found more, while on two occasions I met with only two hard-set ones.

Mr. F. R. Blewitt says:—

"The breeding season is from June to August, but I cannot be sure that it does not lay at times earlier. The nest is found in close-growing thickets in retired places. In structure it is very simple, a mere collection of twigs and leaves of kinds, in size about a foot in diameter, flat, having a small hollow only in the centre for the eggs. In this hollow, leaves are spread over the surface, sometimes of Neem, Siris, and Tamarind. The eggs in form and shape much resemble those of *Centropus*. They are white, with the surface covered with the soft chalk-like substance, but less in depth than what appears on the eggs of *Centropus*. I have found but three eggs in one nest, but whether this is the regular number I cannot tell, having only obtained in all three nests, respectively with one, two, and three eggs. They vary much in size from 1·3 to 1·5 inch in length, and from 1 to 1·1 inch in breadth. The Sirkeer is a shy bird, and somewhat rare. It frequents wooded localities only, at least I have nowhere else met with it. In habits it resembles the Coucal."

Mr. Brooks, writing to me from Chunar, says:—

"May 25th: got a nest containing two fresh eggs, pure chalky-white, like the Coucal's, but smaller. The nest was in a small Banian tree about 15 feet high and in a leafy fork 4 or 5 feet from the top. It was composed of sticks and twigs, cup-shaped inside, and lined with the leaves of the Banian tree. Both birds incubate; at the time the eggs were taken, the female was sitting close to on the nest, and the male so closely that the man had to climb up to it before it would leave. One of the eggs was pure white, slightly glossy, the other was a good deal discolored. There were only two eggs in the nest, and yet they were partly incubated."

The eggs much resemble those of *Centropus rufipennis*, but are smaller and more elongated. They are a dull glossless white, but these eggs too are, like the eggs of the Coucal, often covered with a pale yellowish-brown glaze, which is readily removed by washing or scraping, and leaves the pure white, somewhat chalky, shell unstained beneath. I am doubtful as to the nature of this glaze; eggs are often uniformly covered with it, while I have taken a whole nest full without a single trace of it.

The eggs vary in length from 1·25 to 1·45 inch, and in breadth from 1·02 to 1·1 inch, but the average of a dozen is 1·39 by 1·07 inch.

222.—*Taccocua affinis, Blyth.*

I have never seen the nest of the Central Indian Sirkeer. Mr. F. R. Blewitt, who found several in Saugor, describes it as precisely similar to that of *sirkee.*

The eggs, which I received from him from Saugor, where this is the predominant race or species, appear to me to differ in no respect from those of *T. sirkee.* The birds themselves, many of which were also sent me, are smaller and darker-colored, but, with nearly a dozen eggs of each lying before me, it seems to me impossible to separate the eggs. Like the eggs of *sirkee,* the eggs of this race generally become very much soiled and stained during incubation.

In size the eggs I have (ten in number) vary from 1·34 to 1·55 inch, and in width from 1·03 to 1·1 inch, but the average of the ten is 1·4 by 1·06 inch, so that they are really a trifle larger than those of *sirkee.*

225.—*Æthopyga goalpariensis, Lath.*

According to Mr. Hodgson's M.SS. and drawings, the Himalayan Red Honey-sucker begins to lay in April, the young being fully fledged in July. The nest is purse or rather florence-flask shaped, suspended from a twig; about 6 inches in length and 3 in breadth at the widest part, with an oval entrance (commencing about 2 inches below the point of suspension) about 1¾ long by 1¼ inch broad. There is no portico or projection above the entrance. The nest is composed of black moss and other fine roots, with a little moss compactly interwoven with some cobwebs, and lined with silky cotton-like fibre. The eggs are two or three in number, greyish white, speckled with brown, and measuring about 0·65 by 0·45 inch; in shape rather broad ovals, pointed towards the small end.

229.—*Æthopyga nipalensis, Hodgs.*

Of the Maroon-backed Honey-sucker, Dr. Jerdon remarks that "it is the most common species at Darjeeling, being often seen in gardens in the station. There I obtained a nest of this bird, very neatly, though loosely, made of moss, domed at the top, with the entrance at the side overhung by a sort of projecting roof ; it contained two eggs of a dusky-greenish tinge, with numerous small dusky spots."

According to Mr. Hodgson's notes and drawings, this species begins to lay in April, and builds a comparatively large, oval, hanging nest, (composed of moss and wool, and lined throughout with silky down,) which is attached to some leafy twig, at an elevation of from 3 to 5 feet from the ground. These birds, it is said, breed only in Nepal, in the central hill region, frequenting groves and open forest, in which also their nests are always found. The dimensions of a nest which are given accord well with those of the figure. The nest is egg-shaped, 7·75 inches in length by 4 in breadth, and a little above the middle is an oval aperture about 1·62 by 1·0 inch. There is no portico or projection above this, and whereas in the nest of *miles,* dark-colored hair-like roots seem to constitute the chief components of the nest, in the present species green moss and white wool fibres seem to predominate. They lay two or three eggs, which are figured as moderately broad ovals 0·68 by 0·43 inch. The eggs are represented as nearly white, with a certain amount of reddish mottling towards the large end. They have only one brood in the year, and both birds participate in rearing the young, which are ready to fly in July.

231.—*Æthopyga saturata, Hodgs.*

The Black-breasted Honey-sucker, according to Mr. Hodgson's notes and drawings, builds a beautiful, *pear-shaped,* hanging nest, about 6·5 inches in length by 3 in breadth at the broadest part. The nest is hung at the end of a slender thorny twig, and is composed of moss, bound together with little strips of bark and vegetable fibre, and is lined with the soft down or *pappus* of some asteraceous plant. The entrance is almost immediately below the point of suspension, and is screened by an awning, which projects about an inch and hides more than half of the entrance hole. They begin to lay, it appears, in April, two or three being the number of the eggs, which, however, are neither described nor figured. Like the rest of this genus it breeds only once in the year.

232.—*Leptocoma zeylonica, Lin.*

The Amethyst-rumped Honey-sucker lays at least twice a year, as I have found the eggs both in February and August, but the breeding season is very variable, as will be seen by the notes which I quote further on, to which I may add that Mr. Davison saw a nest containing young birds in Captain Mitchell's verandah at Madras, late in December. A pair had built in the same place, he tells me, year after year, as is indeed, I believe, the habit of these Honey-suckers.

The nests, which are generally attached to the terminal twigs of branches, at heights of from 10 to 30 feet from the ground, are most lovely little structures, hanging purses with the aperture near the top, and, as in *A. asiatica*, with a little projecting portico over the doorway. An average-sized nest will measure externally from top to bottom from 5 to 6 inches in length and about 3 inches in diameter. Internally from the lower edge of the entrance it will be about 2 inches deep and about 1½ inch in diameter. The entrance hole is from an inch to 1¼ inch in diameter. The body of the nest is generally chiefly composed of *very fine* grass or vegetable fibre. The egg chamber very softly lined with feathers or silky vegetable down, and the exterior profusely ornamented with tiny dry flower-buds, scraps of white lichen, dry white leaves, glistening straw, and anything else that happens to be handy, and that appears to have attracted the little bird's attention in any way. The nests are always hung to some slender twig, over which the upper surface of the nest is firmly worked with fibres and vegetable down. Sometimes long pendants of leaves, lichen, &c., hang down from the nest, making it much longer than I have above described.

Elsewhere, before I had seen as many nests as I now have, I thus described them :—

"The only two nests that I have seen of this species closely resemble those, of *Arachnechthra asiatica*. They were in both cases suspended, the one from a Babool, the other from a Peepul tree. They were long and pear-shaped, with the thickest portion of the pear downwards. On one side, just at the swell, a cut had, as it were, been made, and the cut piece had been pulled up so as to form a sort of projecting portico over the entrance hole. The total external length of the nest was about 6 inches. The greatest external diameter about 2½ inches. The portico projected nearly 1 inch. The entrance hole beneath it was oval, about 1¼ inch high and ⅞ inch broad. Internally the nest was about 2¼ inches deep below the lower edge of the entrance aperture, and this lower edge, I may here mention, as in the case of the rim of the nests of the Palm Swift, was very firmly corded and banded, if I may use such an expression, so as to prevent the possibility of the nest being split down at this place. The materials composing the nest were very various. The main fabric of the nest was a tow-like vegetable fibre firmly felted together, and with a good deal of cobweb intermingled. The whole interior of the nest below the level of the lower rim of the entrance aperture was densely felted with the beautiful glossy white down of the seeds of the *Asclepias gigantea*. Externally, apparently for the sake of ornament, or possibly to render the nest less conspicuous, all kinds of odds and ends, chips of wood, scraps of bark, dry petals of flowers, a little moss, and numerous tiny cocoons, were fastened on with cobwebs."

According to my experience, the eggs are invariably two in number. Captain Beavan (*vide infra*) says three, but he is talking of *two* nests, and I think he means that there were two in one and only one in the other nest.

Dr. Jerdon states that "it is exceedingly abundant in Madras, more so I think than in Lower Bengal. It may be seen in every garden flitting from flower to flower, and it builds a very neat nest of grass, vegetable fibres, spider's web sometimes, with a hole at the side near the top overshadowed by a canopy of the same materials, and lays usually two eggs of a pale greenish tinge, with small dusky spots."

Mr. Theobald, writing from Sooramungalum of the Salem District, tells me that August is the laying season there. "The nests are suspended at a moderate height from the ground to the branches of thorny Acacias. They build a very neat little hanging nest, thick at the bottom and tapering towards the top, having a round hole for entrance 2¾ inches from the bottom; circumference at the thickest part 7¼ inches; length 6 inches. It has a prominence above the hole covering about half of it. It is made of vegetable fibres, cobwebs, and chips of dry wood, and lined with a beautiful soft kind of silk cotton (from a milky bush of the *Asclepiadeæ* family, I think it is the *Calotropis gigantea*) which the natives of Southern India call yerkum punjee.

"I always found two eggs in the nests of these birds, and think that the young birds are male and female, for I invariably found one a little bigger than the other; the color of the plumage in the young is the same. The natives also informed me that two eggs are the usual number, and that the young are always a pair."

Captain Beavan, writing from Maunbhoom, says: "Two nests were brought to me on the 27th March, from which I take the following description:—Bottle-shaped; the entrance from one side near the top; its aperture circular, with a dome over it. Composed outside of bits of bark and fibres, firmly agglutinated with spider's web; the top of the nest attached firmly to a small twig, from which it hangs suspended, and exposed to every breeze, which must shake the nest severely and cause it to swing, but without damaging the eggs, owing to the peculiar elasticity of the silky webs employed. Extreme length of nest 6 inches; breadth 2·5 inches; aperture 1 inch in diameter; circumference just below the entrance 7·5 inches. The eggs were three in number, much elongated at the smaller end. Ground color, dirty-white, covered with minute ashy brown specks, which combine so as to form a zone near the blunt end. Both nest and eggs very much like those of *Arachnechthra asiatica;* but the former may be distinguished by its slightly smaller size, and the eggs by the zone. The eggs of both species vary considerably in color, and after a careful examination of fully forty nests and eggs of both species, I find it very difficult to discriminate between them, or draw an exact line of difference. The only way I could be certain of the identity was by having the females caught by birdlime at the entrance of the nest. From captures made in this way, I find that the male of this species takes part in incubation, a fact not observed in *A. asiatica.* Three of the eggs I obtained measured respectively ·65, ·68, and ·56 inch in length; and in breadth ·43, ·46, and ·51 inch. The young when fledged are like the female, but with brighter yellow on the breast."

Long ago Mr. Blyth, then at Calcutta, remarked:—"According to Mr. Walter Elliot, the present species 'builds a hanging nest with an entrance near the top, opening downwards,' and such is the form of a beautiful fabric before me, which I am assured is the production of this bird. It is attached, nearly throughout its length, to a small thorny twig, and is of an elongated pear shape, composed chiefly of soft vegetable fibres, very densely and neatly interwoven; on the outside are some coarser strips of grass, leaves, scalings of bark, &c.; but the substance and internal lining are constructed of the softest fibres only, which are reflected over the lower portion of the entrance, so as to fasten down its rim, imparting thus a neatness of finish to this part of the structure; above the floor of the entrance is an overhanging roof or canopy, formed by the lining of the upper third or more of the nest being made to project semicircularly over the orifice, and then finished externally like the rest, with coarser material and some bits of leaves and the like, to disguise the nature of the fabric."

Mr. F. R. Blewitt sends me the following note:—"I have met with this beautiful species only in the extensive forests of the Raipore and Sumbulpore Districts. It is to be met with in considerable numbers, either singly or in pairs; incessantly flitting from flower to flower, and from tree to tree. I have never seen it in gardens anywhere; it has a very feeble shrill kind of chirp, easily distinguishable from the louder chirp of *A. intermedia*. The bird breeds in February and March and probably part of April. On the 19th February 1871, in the Raipore District, a nest, with two fresh eggs, was found suspended some 20 feet from the ground, from the end of a thin upper branch of a Sal tree in open forest country. After many unsuccessful attempts it was eventually with great difficulty secured. A few days after another unfinished nest was discovered similarly suspended. The nest is bottle-shaped, with a very moderate sized neck, cleverly attached to the branch. The exterior is neatly made of fine grass, largely dotted over with small affixtures of vegetable fibres, spider's web, &c. The interior is carefully lined with soft seed down; the entrance hole is about midway. The nest first found lacked the canopy described by Dr. Jerdon. Constructed at a great height from the ground and cleverly disguised, it is very difficult to detect the small nest of this Honey-sucker."

In shape, size, and coloring the eggs bear the closest resemblance to those of *Arachnechthra asiatica*. They are moderately broad oval eggs, sometimes, however, a good deal elongated, and usually a good deal pointed towards one end; the shell is delicate and close-grained, but almost entirely devoid of gloss; the ground color varies much. In some it is nearly pure white, but generally it is a dingy greenish or brownish white, much freckled, clouded, and streaked with minute greyish brown or brown markings, which commonly form an irregular zone round the larger end and sometimes form a confluent cap. In some eggs the whole of the rest of the surface beyond the zone or cap is devoid, or almost devoid, of markings. In others, the whole surface of the egg is so closely speckled all over as almost entirely to conceal the ground color; the variations in these respects reminding one much of similar variations in the eggs of many species of Larks.

The eggs vary in length from 0·6 to 0·7 inch, and in breadth from 0·43 to 0·49 inch, but the average is 0·65 by 0·47 inch.

233.—*Leptocoma minima*, *Sykes*.

Mr. Davison tells me that "the Tiny Honey-sucker breeds on the slopes of the Nilghiris in September and during the earlier part of October; I have seen young birds only just able to fly about the middle of October. The nest is suspended to a twig about 4 or 5 feet from the ground; it is similar both in shape and materials to that of *L. zeylonica*, but considerably smaller. They lay two eggs."

The eggs, which were taken by Mr. Davison, are perfect miniatures of some of the eggs of *Arachnechthra asiatica*. In shape they are a somewhat elongated oval, a good deal compressed towards one end. They have scarcely any gloss. The ground color is a dull greenish or greyish white, and it is thickly speckled and mottled all over, most thickly so towards the large end, where the spots have a tendency to become confluent and form a zone, with a dull greyish and olivaceous brown.

The eggs measure 0·62 by 0·42 inch.

234.—*Arachnechthra asiatica, Lin.*

The Common Purple Honey-sucker lays at very different periods of the year in different localities, as indeed may be gathered from the various notes which are subjoined. In the Central Duab from February to April is the period within which most eggs are to be found. In Jhansie and Saugor the chief breeding season appears to be from May to August, and even in Agra I have taken them in June, and in Hansee in July. In the Nilghiris they lay in January. They breed all over the plains of India, up to the very summits of the Nilghiris, and up to about 5,000 feet, as a maximum, in the Himalayas. They certainly have two broods in rapid succession, usually in the same nest, and I am not at all sure that they do not have more. They will build almost anywhere; in and about gardens and in the verandahs of houses, in little clumps of Acacia trees especially where these overhang water, and far away in the jungle, or in the cane-brakes of the Terai. When attached to shrubs or trees, the nests are generally suspended from the fine terminal twig of some branch or the frond of a cane.

The nest is pendant, and composed of *all kinds of* materials beautifully woven together, with the silkiest fibres and cobwebs; hair, fine grass, pieces of decayed wood, lichens, rags, thorns, &c., are all pressed into the service. The body of the nest is oval, generally, with all sorts of little pendant pieces of wood, &c., hanging *below*, as ornaments apparently, while the apex of the oval is prolonged into a cone meeting the point of support. A little above the centre of the oval, a small circular aperture is worked, and just above it a projecting cornice, 1 to 1½ inch wide, is extended, then on the opposite side of the oval, the wall of the nest, which is ready some days before the eggs are laid, is pushed out or bulged out a little so as to give room for the sitting bird's tail. The bulging-out of the back of the nest is one of the last portions of the work, and the female may be seen going in and out trying the fit, over and over again. When sitting, the little head is just peeping out of the hole under the awning. I remember in February 1867 seeing a nest suspended to a punkah cane which was stretched across Brooks' verandah at Etawah. This nest was founded on two or three narrow strips of gun-rag, which had been left hanging across the cane, black, and smelling of gunpowder. Yet with these unpromising materials and plenty of silky grass, &c., it made a pretty little pendant home.

The normal number of the eggs is certainly two, but there are said to be sometimes met with; indeed I have a note of a nest taken on the 4th April by Mr. Adam which contained this number; still out of more than fifty nests which I have myself examined, none contained more than two.

As regards the portico, this, though general, is not universal, and I have seen many nests in which it was entirely wanting. *Apropos* of this, and of the nidification of this species generally, Mr. F. R. Blewitt, detailing his experiences in Jhansie and Saugor, sends me the following remarks:—

"The breeding commences about the middle of May and ends about the middle of August. The nests I always obtained on thorny trees, principally on small Keekur and Plum. The nest is in form what may, for want of a better term, be called gourd-shaped, with a neck more or less longish. In the exterior construction of the nest, brown-looking chips of some kind of bark, bits of (and entire) leaves, fine grass, &c., all intermixed, are attached and woven together by spider's webs. The lining of the nest is invariably silky-white seed-down, very neatly affixed to the interior of the structure. The entrance is either a small circular or somewhat oval-shaped hole, about or just above the centre of the nest, with a slightly projecting awning above it. But this awning is not in every nest. Out of some 18 nests obtained by me, seven or eight only had it. I venture to state that this awning is only added when the nest is about perpendicular in position, and where therefore a necessity exists for this additional protection for the entrance. I am the more particular to note this fact, because every nest with the awning, was, when discovered, in a perpendicular position; while those I saw without it were so attached as to stand out a little slantingly, and had the entrance on what may be called the underside; I never saw the entrance hole at the bottom as Colonel Tickell pretends. The eggs in color are whitish, minutely speckled with light brownish spots, on some eggs closely coalescing at the larger end. The regular number of eggs appears to be two or three. I found the length of the nest to be from 7 to 8·5 inches and from 2·8 to 3·4 in breadth."

Captain G. F. L. Marshall writes: "Breeds in March and April in the Saharunpoor District, the young being hatched about the middle of the latter month. It builds an elegant pensile nest, bottle-shaped, with entrance at side, and a slight awning-like projection over it; it is generally placed about 3 or 4 feet from the ground hanging from the end of a bough; it is made of fine grass and straw woven together with cobwebs and covered outside with dead leaves and seeds. The eggs, generally two, sometimes three in number, are large for the bird, of an elongated oval shape and of a dirty white color covered with dingy spots, which sometimes tend to form a zone at the thicker end."

Captain Hutton says: "We found a nest on the 29th of May in the Doon, containing three eggs.

"The nest is a beautiful little structure somewhat pear-shaped, or rather, perhaps, resembling a miniature sodawater bottle, tapering upwards to a point which is attached to a thin twig. The mouth of the nest is placed at one side near the top, and has a very conspicuous shade or verandah projecting over it, composed of very fine fibres of the seed stalks of minute grasses. The lining consists of fine fibres and silky seed-down intermixed. It is somewhat rudely constructed externally, of blades of grass, bits of various kinds of leaves, fine shavings and fibres held together by cobwebs and seed-down, not interwoven but sparingly plastered over the other materials, and most abundant at the point of attachment to the twig from which it depends. In the specimen before me there is much excrement of some species of caterpillar spread over the surface, and seemingly not by the insect but by the bird, as it is found adhering to the bottom as well as to the sides of the nest. It is, however, much more abundant at the upper part, where it appears to have accumulated, as if dropped from the branch of the tree."

Mr. Brooks tells us that this species "is seen occasionally in the valleys near Almorah. On the banks of a small river there, I found a nest of this bird being built in May. The bird lays in March in the plains."

From Murree, Captain C. H. T. Marshall says: "Found several nests of this species in May and June, in the lower valleys, about 4,000 feet up."

Mr. R. M. Adam remarks: "The Purple Honey-sucker is very common about Sambhur; it breeds during the month of April and up to June. On the morning of the 18th April, I saw a female apparently in a great state of excitement over a piece of cobweb in a tree, and I succeeded in lining it like a bee, until I found the beginning of a new nest on a Babool tree, about 15 feet from the ground. On the 19th, it had the upper portion of the nest well formed; on the 20th the nest was well blocked out, but had no inner lining. From the 21st to the 24th, the bird was occupied in ornamenting the outside of the nest with all sorts of stray feathers and other odds and ends. During these days it also filled in the inner lining.

"It is curious how fond these birds are of tacking on pieces of paper and, here and there, a bright-colored feather from a Paroquet or a Roller on the outside of their nests. When in Agra, a bird of this species built a nest on a loose piece of thatch cord in my verandah, and on the side of the nest, stuck on like a signboard, was a piece of a torn up letter with "My dear Adam" on it.

"On the 26th I found the bird sitting on the nest, and I presume it had eggs, but I did not care to disturb it, and on the 27th, for the first time, I saw the male bird near the nest. All through the time of construction, so far as my observation went, he never assisted the female in the slightest degree. Now he seemed exceedingly happy, fluttered every now and then about the nest, and after each careful inspection he was so seemingly pleased with the handiwork of his mate that he perched on an adjoining branch and poured forth a joyous strain, flapping his wings and making his axillary feathers rotate in the most extraordinary manner. On the 13th of May the young were hatched, and I never once observed the male coming near the nest to feed them; about the 24th the birds were well fledged. It does seem strange that the male of this species should not take any part in the construction of the nest, the hatching or the rearing of the young; but I presume that the reason of this is, that his conspicuous plumage about the nest would attract the attention of birds that might destroy it. While in Oudh I had a nest of this bird brought to me with two hard-set eggs on the 7th April, and another nest with feathered young on the 10th April; again on the 14th April, I had a nest brought to me with three eggs. The eggs were a pale bluish green, with delicate freckles of neutral tint, most abundant on the thick end. In Agra I have taken the nests in June and July."

Miss Cockburn remarks that in the Nilghiris they generally lay in January. "Their nests are composed of cobweb stuck thickly over with small pieces of dried leaves; the whole forms a neat oblong hanging nest, the entrance being at one side towards the top over which there is a little canopy, which gives a look of snugness and security, as if not a drop of rain could enter the abode. The interior is warmly lined with the down of seed pods, and the whole construction is generally attached to the extremity of a small branch, which the slighest breath of air puts in motion."

Dr. Jerdon has told us that "a pair built their nest just outside my house door at Jalna. It was commenced on a thick spider's web, by attaching to it various fragments of paper, cloth, straw, grass, and other substances, till it had secured a firm hold of the twig to which the spider's web adhered, and the nest suspended on this was then completed by adding other fragments of the same materials. The entrance was at one side near the top, and has a slightly projecting roof or awning over it."

The eggs of this little bird vary so much that the two extremes of a good series of its eggs could hardly at first be believed to pertain to the same species. In shape they are typically a moderately broad oval, considerably pointed towards one end; but some are nearly perfect, rather elongated ovals, and a few are short and pyriform. The ground color is greenish, greyish, or brownish white; in some but little, in others almost entirely, obscured by the markings.

These latter, always minute and ill-defined, are grey, purplish grey, brown, or greyish brown. A certain number of the eggs are pretty uniformly speckled and freckled over the whole surface, but in the majority the markings are densest towards the large end, where many exhibit more or less perfect caps or zones, and to which locality in some few specimens the markings are exclusively confined. Dull, dingy little eggs, giving small promise of the brilliant offspring they are destined to produce, their coloring recalls the eggs of the Sedge Warbler, of several species of Wagtail and of many of our Larks; and I have before me now specimens which, so far as tint and character of markings are concerned, are undistinguishable from specimens of the eggs of these various species.

In length the eggs vary from 0·6 to 0·68 inch, and in width from 0·45 to 0·48 inch; but the average of fifty eggs is 0·64 by 0·46 inch. I have one monstrous and absolutely abnormal egg of this species taken by Mr. W. Blewitt at Hansee on the 18th April, which measures 0·78 by 0·49 inch.

234 bis.—*Arachnechthra intermedia, Hume.*

Mr. F. R. Blewitt writes: "Hume's Purple Honey-sucker is numerously met with in the extensive forest tracts of the Raepore and Sumbulpore Districts. It is usually met with singly or in pairs; occasionally three or four may be seen on the same tree feeding on the nectar of the flowers. Its habits are very similar to those of *Arachnecthra asiatica.* The note is a feeble chirp, somewhat resembling that of this latter Honey-sucker. It breeds from some time in February to the end of April. The nest is bottle-shaped with a more or less lengthened neck, and constructed externally of fine grasses, with here and there small chips of soft bark, leaves, or spider's web attached to it. The interior lining is composed of seed-down; a small circular hole is made about the centre for the entrance.

"The nest is suspended from the end of some small branch of a low bush or small tree. On the 15th March my men brought me three eggs (hard-set), and the nest found on the branch of a low bush overhanging a small stream. In April (I forget the date) a nest, with two eggs, was secured on the branch of a fruit tree in a garden."

The eggs of this species, which, with the parent birds and nest, I received from Tipperah, though slightly larger than the average of those of *A. asiatica,* are undistinguishable from large specimens of the latter.

The nest too, an exquisite structure, is precisely similar to some I possess of *A. asiatica.*

The eggs vary in length from 0·64 to 0·7 inch, and in breadth from 0·47 to 0·5 inch. I have only four as yet.

234 ter.—*Arachnechthra flammaxillaris, Blyth.*

Mr. W. Theobald states that he obtained a nest of this species, the Flame-tuft Yellow-bellied Honey-sucker, at Tavoy on the 1st February. The nest resembled that of *A. asiatica,* and was a neat purse, suspended in a Lime tree (*Citrus*). It contained two oval pyriform eggs, pale greenish, speckled with greyish ash, which measured 0·56 by 0·43 inch. I suspect some error in measurements here; these dimensions are apparently too small for the bird.

235 bis.—*Cyrtostomus pectoralis, Horsf.*

Of the nidification of the Blue-fronted Yellow-bellied Honey-sucker, which, so far as we yet know, occurs within *our* limits only in the Nicobars, the following brief note by Mr. Davison sums up all we yet know:—"Although I found several nests of this species, I never obtained the eggs. On the 19th of January I found a nest at Camorta; I shot both the birds, but on climbing up to the nest found it empty. Again, on the 17th February, I found three nests, two empty, one with two very young birds."

The nest is quite that of an *Arachnechthra*, very similar to, but larger and more coarsely made than that of *A. asiatica*. The nest is a pendant, elongated egg, a good deal drawn out towards the twig it hangs from, 9 inches in length and 3 in diameter, composed chiefly of dry grass and cocoanut fibre, with a few feathers intermingled in the body of the nest, and the interior thickly lined with these. About an inch below the point of suspension, the portico projects for 1·25 inch; it is about 1·5 thick; and below this is the little oval entrance to the nest about 1·25 by 1·0 inch. Interiorly the cavity is about 3·5 inch deep, and below the lower margin of the entrance hole nearly 1·75 in diameter. The portico and the upper portion or neck of the nest is chiefly coir, while the lower and broader portions are mostly grass and pieces of bamboo sheaths, a dead leaf or so, and a scrap or two of bark. There is no attempt to decorate the nest externally, as is so common in this genus; but perhaps the nest was not quite finished, though Davison says they were all alike.

236.—*Dicæum cruentatum, Lin.*

Messrs. Mottley and Dillwyn remark that in South-east Borneo, the Scarlet-backed Flower-pecker is rather common in some localities. "The nest of this very lively and pugnacious little bird is a most beautiful fabric, made with an opening in the side, and suspended from a twig, being built chiefly of lichens and spider's webs."

238.—*Dicæum minimum, Tick.*

The late Captain Beavan is one of the few persons, so far as I know, who has certainly taken the nest of Tickell's Flower-pecker. A nest and eggs taken by Mr. R. Thompson belong undoubtedly to *Piprisoma agile*; while a nest and eggs taken by some of Mr. F. R. Blewitt's people, on which a bird of the present species was captured, are precisely of the *Zosterops palpebrosus* type, though smaller, and *cannot* belong to this species, which must build a hanging purse-like nest, and must probably* lay, as *concolor* does, pure-white eggs. I have no doubt that the following account by Captain Beavan is (as indeed I have found everything of his that referred to his personal experience) strictly correct:—

"The first nest was brought to me at Beerachalee on the 16th March, with three pure-white eggs, which measured ·6 inches by ·4 inch. The nest is much like that of *Arachnechthra asiatica,* and of the same description, being suspended by spider's web from a bough; but it is a good deal smaller, rather less oval, and more round, and the inside more carefully constructed. It is lined with the softest materials, so as to put me much in mind of the cocoon of the tusseh silk-worm *(Antheræa paphia)*—it was so smooth and well made. In length it was 3·5 inches; in breadth 2 inches; and the circumference 7 inches. Several nests with young ones fully fledged were brought to me about the beginning of April."

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* But compare what Gould says of *Dicæum hirundinaceum*:—

"Its beautiful purse-like nest is composed of the white cotton-like substance found in the seed-vessels of many plants, and among other trees is sometimes suspended on a small branch of a *Casuarind* or an *Acacia pendula*. The ground-colour of the eggs is dull-white, with very minute spots of brown scattered over the surface; they are 9 lines long by 5½ lines broad."

Since the above was written, Mr. B. Aitken has favoured me with the following:—"I send a nest and specimens of *Dicæum minimum,* one of the commonest birds about Bombay and Poona. Its favourite food is the ripe berry of the common parasite *Loranthus longiflorus.* Indeed the bird is so plentiful that one or two can be seen at any time wherever there is a bunch of the parasite growing.

"The nest was taken from a Mango tree in Poona, at a height of about 10 feet from the ground, on the 5th April. It was beautifully placed under a cluster of leaves which hung round it on every side. It contained one *white* egg, smaller than that of the *Arachnechthra asiatica.* Unfortunately, I placed the egg on the wall out of the reach of rats, but within reach of a wretched gecko (house lizard), which destroyed it the first night."

The nest is a beautiful little egg, suspended by the pointed end (which is slightly, and only slightly, extended) from the point of junction of three slender twigs. The length of the nest (exteriorly) is exactly 3 inches, the greatest breadth 1·7 inch. In front, from close to the point of suspension to near the middle of the nest, is an oval aperture, 1·25 inch in length and nearly 1 inch in breadth. The whole nest is composed of the silky pappus of some asteraceous plant, or, it may be, of the silky down of the *Calotropis,* held together by a slender irregular web-work of vegetable fibres, in which here and there a very few minute fragments of the excreta of caterpillars and tiny pieces of bark and fine grass stem have been, perhaps accidentally—for they are few and far between—intermingled. The nest varies from 0·25 to 0·4 inch in thickness; the thickest portion is just below the lower margin of the aperture, where a great deal more vegetable fibre is used than in any other part, clearly to obviate any danger of the nest being torn at this spot, where the strain on it of the birds going in and out would always be greatest. The whole interior is soft, silky, felted down.

239.—*Dicæum concolor, Jerd.*

I have never myself obtained the eggs and nests of the Nilghiri Flower-pecker, but have had many of these sent me. The first nest I obtained I described elsewhere, thus:—

"The nest of this species is a beautiful little purse, hung from the branch of some shrub, loosely woven, exteriorly with fine grass and warmly lined with the silky pappus of some asteraceous plant. In the exterior frame-work of the nest, small fragments of fine moss and down of plants, similar to that so largely used by *Piprisoma agile,* are intermingled. The total exterior length of the nest from the point of suspension to the bottom is about 3 inches, and the exterior diameter about 2 inches. The entrance, which is circular and just below the point of suspension, may be about ¾ inch in diameter, the cavity extends for about 1½ to 1¾ inch below the lower margin of the opening, and is perhaps between 1¼ and 1½ inch in diameter." Subsequently I saw many other nests, and recorded the following note:—

"The nests of the Nilghiri Flower-pecker are regular purses, comparatively large for the size of the bird, reminding one much of those of *Piprisoma agile.* They are hung like those of the *Arachnechthra's* from a slender twig, but whereas the apertures in the Honey-suckers are in the sides or parallel to the suspending twig, the entrance in the Flower-peckers is in front, or at right angles to the twig. They are lined with the finest and silkiest vegetable down, and externally the nest is composed of vegetable fibres, lichen, little pieces of grass, portions of leaves, and some little cobwebs; lining and all included, they are scarcely anywhere more than ⅜ inch in thickness. They vary a great deal in size externally; some are at least 4 inches deep, measured from the bottom of the nest to the top of the suspending twig; others are not above 3 inches. Internally the cavity, measured from the lower edge of the orifice, is from 1½ to 1¾ inch in depth, and the internal diameter varies from little more than 1 inch to nearly 2 inches."

The Nilghiri Flower-pecker breeds from January to April, and lays three eggs.

Mr. Davison notes the following in regard to the nidification of this species:—"This little bird, so abundant on the Nilghiris, breeds at Ootacamund and its vicinity during the latter end of February and March. The nest is suspended to a small twig; it is pear-shaped, composed externally of cotton, bits of moss, a few odd feathers, and the pappus of asteraceous plants, closely and compactly put together; on the inside it is thickly felted with this pappus or other soft substance mixed with feathers; the entrance is on one side near the top, circular, and with a slightly projecting canopy over it. In size the nest is a little smaller than that of *Arachnechthra asiatica,* and very similar to it in shape, but is a very much neater and more compact structure, and is never composed of the same coarse substances used by *Arachnechthra asiatica,* to wit, straw, bits of bark, &c.

"Usually some bushy large-leaved tree is selected, and the nest suspended to a slender twig far out on one of the branches, and well screened by the overhanging leaves; when a situation like the above is chosen, the nest is usually only from 10 to 15 feet from the ground; but I have known them to build in the slender-leaved Acacia (*Acacia melanoloxylon*), and then the nest is seldom placed lower than 35 or 40 feet from the ground, and is placed where the foliage is thickest. I have always found three pure-white eggs."

Miss Cockburn, writing from Kotagherry near Ootacamund, remarks:—

"Dr. Jerdon appears not to have known anything of its nidification. I have been fortunate in getting its nest and eggs, which, I am sure, could not have been found if the bird had not been seen with a white feather in its bill and watched till it flew to its nest, which was built at the extremity of a high slender branch of an Australian tree. The nest was at the measured height of 34 feet from the ground and extremely difficult to reach, but, as it was rare, every effort was made to approach it, and they were successful. The Nilghiri Flower-pecker builds a *very* neat hanging nest, 3 inches in length, and the opening at the side towards the top. The materials used are fine long grass, green moss, and cobweb. The inside warmly lined with a quantity of the down of seed-pods and feathers. The nest alluded to above was found in the month of January, and contained two very small pure-white eggs."

The eggs of this species, which I owe to Miss Cockburn and Mr. Davison, are elongated ovals, pure white and glossless, for all the world like little sugarplums.

The eggs vary in length from 0·6 to 0·68 inch, and in breadth from 0·4 to 0·46 inch.

240.—*Piprisoma agile*, *Tick.*

The Thick-billed Flower-pecker lays from the middle of February to the end of May, according to locality, breeding earlier in the plains and later in the Himalayas.

The nests vary greatly in material, but very little in size or shape. They are invariably—let the material be what it may—small, rather full-bottomed, purse-like bags, hung from a small twig as nearly horizontal as possible, and with the aperture with its major axis in the same plane as the twig to which the nest is suspended and immediately below the twig. The total length of the nest, measured from the upper surface of the twig to the bottom of the nest, is from 3½ to 3¾ inches. The breadth of the nest at the point of suspension is about ½ inch, and the lower baggy portion of the nest is about 2 inches in diameter. The depth of the nest exteriorly below the lower edge of the entrance aperture is about 1½ inch. Typically the nest is, as described by Captain Beavan and figured by Wolf, a felt-like pliable fabric composed of fibres, and the down taken from young shoots and flower-buds of various plants, specially from the *Butea frondosa,* and our two common Indian *Loranthi.* The thickness of the fabric for the first inch below the twig scarcely exceeds in this kind of nest ⅛ inch, but it thickens gradually, so that at the bottom it is fully ⅜ inch thick. The fabric is soft and pliable, so that one nest before me, taken more than six months ago, may even now be rolled up without injury. This, however, is not the only type of nest constructed by this species. It sometimes makes a nest of the same shape and dimensions, it is true, but of widely different materials. In these cases the exterior skin of the nest, if I may so term it, is a very loose network of very fine tow-like fibres, backed internally throughout by a thick felting of the soft silky pappus or seed-down apparently of some asteraceous plant. One such nest I myself obtained with three young ones and both parents in the valley of the Sutledge below Kotgurh towards the end of May, so that there is no mistake about the matter. The nest in this case was about 5 feet from the ground, and hung in a small thorny bush, a kind of *Carissa,* I think.

Writing from the Kumaon Terai, Mr. R. Thompson says: "I obtained a nest of this bird at Ramnuggur, on the borders of the Sub-Himalayan Range, on 12th May, which contained two eggs of a fleshy-white color, thickly blotched with pinkish spots.

"The nest was a neat structure pendent from a thin branch of a small leafless tree. It was entirely composed of the pubescent covering of the skins of a species of *Loranthus* which the birds had scraped off, and mixing with spiders' webs had woven into a thin felt. The shape of the nest was that of a purse opening down the side."

Later, writing from Mirzapoor, he says: "March 6th: shot several males, no females; these latter must be sitting, but in Kumaon they never commence breeding until the end of April. Agrore, 8th March: I was perfectly correct in my surmise that these birds were now breeding. This morning I took a nest, containing two newly hatched young ones, with my own hands. I observed the old birds coming and going, and appearing suspiciously anxious of the presence of a Shrike (*Lanius erythronotus*) which was hanging about, and this led me to search for the nest. It was on a leafless (deciduous) bush of the *Kutber* (*Zizyphus kudber*) about 10 feet from the ground. The old birds hovered about whilst I was taking it, and more than once perched close over my head. Chopun, 17th March 1869: found three nests, two with very young birds in them, not fledged, so had not the heart to take them. There were two young ones in each; took the third nest, which was empty and torn.

The young no doubt had been eaten by a shrike or crow. 19th March, Modahpore: today saw a couple fixing the foundation of their nest with cobwebs and the pubescent downy covering of the young shoots of *Butea frondosa,* which the birds bit off in small pieces and mixed with cobwebs; both birds at work, alternating the time of arrival and departure with material.

"The nests seen on 17th at Chopun were hung on the following kinds of trees.—

"1st *Conocarpus latifolia,* was 14 feet from ground: 2nd, *Zizyphus kudber,* was 12 feet from ground: 3rd, *Conocarpus latifolia,* 9 feet from ground.

"The one seen to-day at 6 feet from ground on a twig of *Zizyphus kudber.*"

Captain Beavan, who took several nests in Maunbhoom, one of which was figured in the Ibis, tells us: "The first nest was brought to me on the 26th March, with only two eggs, the usual number being three. The nest is very peculiar, a pocket-like structure suspended from a small bough, which forms the roof, the entrance being from one side near the top. It is composed entirely of spider's web and other silks with which a pinkish-brown fluff (probably from some tree in flower) is felted together, making the nest look entirely of that colour. There is no lining, only the material employed is denser at the bottom than at the top of the nest. The great peculiarity is, that the nest is as if woven in one piece, and, like a bit of cloth, can be shaken or compressed without doing it any injury. The length is 3 inches; breadth 2 inches; entrance hole 1·5 inch long by ·87 inch broad. The eggs are moderately elongated, of a light pink ground-colour, blotched indistinctly with pink spots, more frequent and massed at the obtuse end. They are large for the size of the bird, their length being ·62 inch, and their breadth a little over 0·37 inch."

Two or three eggs are laid each time, the bird having, I am inclined to believe, two broods at least in the year.

The eggs vary a good deal in size and shape, as well as in colour. Typically they are rather elongated ovals, but comparatively spherical and somewhat pyriform examples occur. The ground colour varies from white just tinged with rosy to a decided pink, and the markings from brownish-pink to claret colour. The markings, again, are sometimes comparatively large spots, at others mere specks; in some eggs are sparse, in others thickly studded, in all are most numerous towards the large end, where they sometimes form an irregular zone or cap, and in some are almost confined to this part of the egg.

The eggs vary in length from 0·6 to 0·69 inch and from 0·39 to 0·43 inch, but the average is about 0·63 by 0·41 inch.

241.—*Myzanthe ignipectus, Hodgs.*

Mr. R. Thompson tells me that the Fire-breasted Flower-pecker "breeds regularly at and about Nyneetal, laying in June and July. It constructs a pendent nest, which it attaches to the bare bough of some large tree. In shape the nest is a sort of purse, opening at the side towards its upper extremity. The nest is like thin felt, and is composed of the pubescent covering of the stems of various species of *Loranthus,* or misletoes. I never examined the eggs."

According to Mr. Hodgson's notes and figures this species lays in April and May. They build, in groves or open forest, a hanging nest rarely above a couple of feet from the ground. The nest is attached to the end of some leafy spray which is incorporated in its substance. In shape it is pyriform, some

5·75 inches in length by 2·75 in width; the entrance, which is about 2 inches below the point of suspension, is circular and about 1 inch in diameter. The nest is chiefly composed of green moss, and hair-like roots, and is lined with soft grass and grass flowers; two or three eggs (which however are neither figured nor described) are said to be the maximum number laid, and both sexes are said to participate in the work of incubation and rearing the young.

242.—*Pachyglossa melanoxantha, Hodgs.*

Dr. erdon says, "this curious little bird, (the Yellow-bellied Flower-pecker,) has hitherto only been found in Nepal. Hodgson says that it feeds on small insects and viscid berries, *and makes an ingenious pendulous nest,* like *Myzanthe.* I was not fortunate enough to procure this bird in Sikhim." I have been able to trace nothing about it myself in Mr. Hodgson's notes or drawings.

243.—*Certhia himalayana, Vig.*

Writing from Murree of the Himalayan Tree-creeper, Captan C. H. T. Marshall says: "This is a most difficult nest to find, as the little bird always chooses crevices where the bark has been broken or bulged out, some 40 or 50 feet from the ground, and generally on tall oak trees which have no branches within 40 feet of their roots. There were young in the few nests we found. Captain Cock secured the eggs in Kashmir; they are very small, being only ·6 by ·45; the ground is white, with numerous red spots. The nests we found were in the highest part of Murree, about 7,200 feet."

243 bis.—*Certhia Hodgsoni, Brooks.*

Hodgson's Tree-creeper, if really distinct, is the supposed *C. familiaris* obtained by Dr. Jerdon in Kashmir, of which he gave me two specimens. Mr. Brooks says:—"It was seen at Gulmurg and also at Sonamurg, where Captain Cock took a few nests. The egg is much more densely spotted than that of the English creeper, so as almost to hide the reddish-white ground colour. Size 0·59 to 0·65 inch long by 0·48 inch broad; time of laying, the *first* week in June."

The egg is of smooth texture, without gloss, of a purplish white ground-colour, and fully spotted all over with light brownish-red, especially at the larger end. Numerous spots of reddish grey or pale inky purple are intermingled with red ones.

In shape the egg varies from a somewhat elongated oval, more or less compressed towards the smaller end, to a comparatively broad oval, also slightly compressed towards the latter end. In all the eggs that I have seen, the markings were more or less confluent towards the large end. Their dimensions are correctly recorded by Mr. Brooks.

248.—*Sitta himalayensis, Jard.* and *Selb.*

Mr. R. Thompson says :—

"In Kumaon the White-tailed Nut-hatch breeds in May and June, laying from five to six eggs, in holes in trees, especially in oaks."

According to Mr. Hodgson's notes and drawings this species begins to lay in April, constructing a shallow saucer-like nest of moss lined with moss roots in holes of trees at no great elevation from the ground. One such nest, the measurements of which are recorded, was 3·25 inches in diameter and 2 in height externally; the cavity was 2·25 inches in diameter and 1·25 inch in depth. They lay three to four pure white eggs slightly speckled with red, which measure about 0·72 inch in length by 0·55 inch in width. They breed once a year, and both sexes assist in incubating the eggs and rearing the young.

249.—*Sitta leucopsis, Gould.*

Captain Cock took the eggs of the White-cheeked Nut-hatch late in May and early in June (1871) in Kashmir at Sonamurg up the Scind Valley.

The eggs of this species vary somewhat in size. In shape some are moderately elongated, some are somewhat broad ovals, and all are, more or less, compressed towards the smaller end, which, however, is obtuse and not at all pointed. The ground is white, and has a slight gloss. The markings consist of small spots and minute specks, some eggs exhibiting only the latter. In all cases the markings are most dense towards the large end, where they generally form an irregular and ill-defined mottled cap or zone. In colour the markings are red and pale-purple, the red varying from bright brick-dust red to brownish and even purplish-red, and the purple being sometimes lilac and sometimes grey, and here and there in a single speck, almost black. In length the eggs vary from 0·67 to 0·75 inch, and in breadth from 0·54 to 0·55 inch.

253.—*Dendrophila frontalis, Horsf.*

The Velvet-fronted Nut-hatch lays from the middle of February to the end of May. It breeds in the forest tracts of the Sub-Himalayan Ranges, in the Central Indian forests, the Ghâts of Southern India, and the well-wooded slopes of the Nilghiris, Pulneys, &c.

It builds a compact little nest of moss and feathers in a tiny hole in a tree, selecting, I believe, generally a natural cavity, but certainly trimming the entrance and interior itself.

Mr. R. Thompson says: "This species is common in all the low densely wooded valleys of the Sub-Himalayan Ranges of Kumaon, at an elevation of from 1,500 to 2,500 feet. It breeds in May and June in hollows of trees. Any small hole suits for a nest, and it lays four or five eggs, for I have seen it with as many young, though I never took the trouble of getting out the eggs themselves."

Mr. Davison says: "This Nut-hatch breeds on the Nilghiris as high up as Ootacamund, nesting in holes of trees, and laying three or four eggs spotted with chestnut, pinkish-red or reddish-brown. The nest is composed of moss, moss-roots, &c., and lined with feathers. I am not quite certain how long the breeding season lasts, but I think that it is from the middle of April to the early part of May."

Miss Cockburn, of Kotagherry, sends me the following account of the first nest she took of this species:—

"After having wished for some years to obtain the eggs of this bird, I was delighted to hear from my brother that he had seen a Nut-hatch go into a *small* hole in a tree, and that on looking into it he had seen something like a nest. I went prepared with a chisel and hammer, but wished first to ascertain fully who the owner of the nest was. After watching at a respectful distance for a long time, an Indian Grey Tit flew to the hole and peeped in. My first thought was one of great disappointment at having ridden many miles, with such high expectations to find only a common titmouse's nest; but it did not last long; the inquisitive Grey Tit found the hole too small for him, and flew off just as happily as he had flown to it. I continued to watch, and was quite repaid by seeing a Velvet-fronted Nut-hatch fly to the top of the tree containing the nest, and descend rapidly down the trunk (which was about 12 or 13 feet high), as if it knew where the wee hole was, and disappear into it. This was sufficient proof as to the proprietor of the nest; I walked quietly up to the tree, and when within a foot of it out flew the bird. My handkerchief was stuffed into the hole to prevent any chips breaking the eggs, should there be any, and making use of the chisel and the hammer. I soon made the hole large enough to admit my hand. The nest contained three eggs, which I most carefully extracted one by one. The nest was then brought out and consisted of a quantity of beautiful green moss, feathers (many of which belonged to the bird), some soft fine hair, and a few pieces of lichen. This nest was discovered on the 10th February. The tree it was found in grew nearly alone, at the side of a road not much frequented.

"The eggs were quite fresh, and most probably the bird would have laid at least one more, but these were sufficient to show the colour of the eggs, which were pure white with dark and light red spots, and blotches chiefly at the thick end, besides a circle of spots like a Fly-catcher's eggs."

One egg of this very beautiful species was sent me by Miss Cockburn, who took it herself in the Nilghiris. It is intermediate in size and colour to those of the European Creeper and Nut-hatch, while at the same time they strongly recall the eggs of *Parus cinereus.* In shape the egg is a broad oval (not quite so broad, however, as those of the European Nut-hatch are), slightly compressed towards one end. The ground-colour is white, and the egg is blotched, speckled, and spotted, chiefly, however, in a sort of irregular zone round the large end, with brick-dust red and somewhat pale-purple. The shell is fine and compact, but devoid of gloss. The egg measures 0·68 by 0·55 inch.

254.—*Upupa epops, Lin.*

So far as I know, the European Hoopoe, though a common visitor to the plains of India during the cold season, breeds with us only in the Western Himalayas.

They lay during April and May, and possibly in June also, in hollows of trees, as a rule, but occasionally in holes in the walls of ruined temples. They appear generally to make some little nest, a little grass and a few feathers being placed as a bed for the eggs, but in a nest that I found in a little ruin in the valley of the Beas, above Minalee, a quantity of soft hair had been added to the usual complement of grass and feathers.

They lay normally from four to seven eggs, but Mr. Brooks informed me that he took a nest out of a hollow Willow at Ramu in Kashmir on the 16th of May, containing ten deeply incubated eggs.

From Murree, Captain C. H. T. Marshall reports: "Two nests in holes in trees. In one instance we watched the cock bringing food to the hen, whom we afterwards caught on the nest. This would go to prove the theory advanced that the Hoopoe, like the Hornbill, remains on her nest all the time until the eggs are hatched. Elevation 7,000 feet."

The eggs are similar to those of our common Indian Hoopoe, but considerably larger; they are somewhat elongated ovals, devoid of gloss, varying in tint from pale-bluish to pale-greenish grey. They exhibit no markings, but are often a good deal stained in the process of incubation.

They vary in length from 1·06 to 1·2 inch, and in breadth from 0·63 to 0·75 inch, but the average of numerous eggs is 1·14 by 0·7 inch.

255.—*Upupa nigripennis, Gould.*

The Indian Hoopoe lays from February to May in different parts of India. In the Doab, March and April are the months in which the majority of the eggs are found.

They nest in holes, in trees, walls or banks, never at any great elevation from the ground, and occasionally in the roofs and between the rafters of houses. Very little nest is made as a rule; a little hair, a few feathers, leaves or fine grass stems, carelessly strewed over the floor of the hole or hollow, constitute their apology for a nest, and when the holes of trees are resorted to, there is often absolutely no nest at all. The female alone incubates, and, especially when the eggs are near hatching, scarcely ever leaves them for a moment, being assiduously tended by the male, who brings her food perpetually.

From four to seven is the normal number of the eggs, but smaller numbers may often be met with fully incubated, while eight and nine are *said* (I do not vouch for the fact) to be occasionally met with.

Miss Cockburn, writing from Kotagherry, tells us that "the Lesser Hoopoe selects holes in stone walls (such as are built for cattle-pens) and in earthen banks as places to build in, and forms a mere apology for a nest, consisting of a few hairs and leaves, which in a short time has a most offensive smell, and it is many days before the eggs, which are four in number and of a dingy white colour, loose what they have imbibed from it. They are generally found in April; these birds select if possible the same places every year to lay in."

Mr. Davison gives me the following note:—"This species breeds on the Nilghiris in April and May, laying usually seven eggs in the hollow of a tree, or in holes in old walls, and I have even known of a nest taken from under a large stone lying on the side of a much frequented road. I have noticed that the only pretence of a nest was a few dried leaves and small twigs. I am not certain whether these were brought into the hole by the bird, or, as is most probably the case, were accidentally accumulated there. It is curious how very closely the female sits, especially when the eggs are much incubated. I have frequently put my hand into the hole and taken her off the eggs, she pecking quite viciously all the time, and occasionally giving utterance to a peculiar hissing sound. The same hole is used year after year, even although all the eggs are taken each time. I took eggs from the same hole for four consecutive years. After the eggs were taken, the bird did not lay again in the same hole that year, although she returned to it again the next."

In the Deccan, we learn from Captain Burgess that "it breeds in the middle of April and May, building its nest in holes in the mud walls which surround the towns and villages in the Deccan. I transcribe a note, taken on 7th May 1850, on the subject: 'Today a man brought me word that about fifteen or twenty days ago he found a pair of Hoopoes breeding in a hole in the wall of a town; the nest contained two young birds; it was composed of grass, hemp, and feathers. The same man tells me that he discovered another pair building.' The headman of the town of Sintee brought me an egg of the Hoopoe; it was of a very pale-blue or rather skim-milk colour. He found the nest in a hole in a fort wall; it was made soft with a few pieces of hemp, and contained three eggs."

Captain G. F. L. Marshall remarks: "The Hoopoe breeds in March in the Saharunpoor District; the young are hatched towards the end of the month.

"The eggs are laid in holes of trees, or among the rafters of houses, and often in the nooks and crannies formed by twisted suckers of the Banian tree (*Ficus indica*); if in the roof of a house, the eggs are generally laid on a little layer of rubbish and thatching grass, but in trees no attempt at lining the hole is made.

"The usual number of eggs is five or six. They are of an opaque greenish-blue colour, without spots; in shape they are an elongated oval; the shell is thick and rather rough.

"It is a very familiar bird and common in the district, almost every house having a pair living in the verandah."

In Oudh Mr. R. M. Adam says that our bird "breeds during February, March, and April; they build in holes in buildings and in the trunks of trees. The eggs, in one case, were laid in a hollow surface which was carelessly lined with human hair. The first nest I saw was on the 26th March. It was built in a hole in the wall of the Baraich Court-house, about 15 feet from the ground, and contained several well-fledged young birds. Although crowds of natives were constantly thronging in the immediate vicinity of the nest, the birds kept flying backwards and forwards feeding their young.

"Another nest was built in a hole in the mud gable end of an inhabited house, about 5 feet from the ground. The bird was sitting on six eggs, and when I put my hand into the opening it merely receded, showing no inclination to defend its eggs or to make a noise.

"The third nest I found was in the trunk of a Nasoot or Nausuk tree (*Erythrina indica*), about 5½ feet from the ground.

"On two occasions I found six eggs in one nest, and once I found two fresh eggs."

From Kumaon and Gurhwal, Mr. R. Thompson tells us that "*Upupa nigripennis* breeds, beginning early in February till end of May. In the Sub-Himalayan region these birds, breeding in forest or jungly tracts, select hollows of trees at no great elevation from the ground. The eggs, four or five in number, of a very pale-blue, are laid on the bare wood without any preparation or pretence to a nest being made. The young are hatched, sparingly covered with a beautiful white down, and emit a very offensive smell. The female sits closely and hisses like a snake if approached. I have known instances when, if a young brood was destroyed, or the eggs removed, the parent birds set about and selected a new site for a nest, and therein re-commenced the nidification process.

"The Common Hoopoe extends far into the Himalayas, but keeps along the lowest levels of the warmer valleys. I have known them to breed and live all the year round at Sireenuggur in Gurhwal."

The eggs of our Indian Hoopoes are commonly a very lengthened oval, almost always a good deal pointed towards one end, and sometimes showing a tendency to be pointed at the other end too, a most remarkable form of egg, which I cannot recall having observed in any other species. In colour they vary somewhat, chiefly, I think, according to whether they were fresh or more or less incubated when obtained. When quite fresh, all those that I have seen were of a pale greyish-blue tint, what Dr. Jerdon, I think, calls skimmed-milk colour, but many are a pale olive-brown or dingy olive-green, and every intermediate shade of colour is observable. As a rule, they have scarcely any gloss at all, and of course are quite devoid of markings. They are decidedly smaller, and, as a rule, more elongated than the eggs of *U. epops.*

In length they vary from 0·9 to 1·05 inch, and in breadth from 0·65 to 0·73 inch, but the average of fifty eggs measured is 0·97 by 0·66 inch.

256.—*Collyrio lahtora, Sykes.*

The Indian Grey Shrike lays from February to July, but the majority of my eggs have been obtained during March or April.

It builds, generally, a very compact and heavy, deep, cup-shaped nest, which it places at heights of from 4 to 10 or 12 feet from the ground in a fork, towards the centre of some densely growing thorny bush, or moderate sized tree, the various Caroundas, Capers, Plums, and Acacias being those most commonly selected.

As a rule, it builds a new nest every year, but it not unfrequently only repairs one that has served it in the previous season, and even at times takes possession of those of other species.

The nest is composed of very various materials, so much so that it is difficult to generalize in regard to them. I have found them built entirely of grass-roots, with much sheep's wool, lined with hair and feathers, or solidly woven of silky vegetable fibre, mostly that of the *Putsun (Hibiscus cannabinus)*, in which were incorporated little pieces of rag and strips of the bark of the wild plum, (*Zizyphus jujuba*), but I think that most commonly thorny twigs, coarse grass and grass-roots form the body of the nest, while the cavity is lined with feathers, hair, soft grass, and the like.

Generally the nests are very compact and solid, 6 or 7 inches in diameter, and the egg cavity 3 to 4 in diameter, and to 2½ in depth, but I have come across very loosely built and straggling ones.

They have at times two broods in the year (but I do not think that this is always the case), and lay from three to six eggs, four or five being the usual number.

Mr. F. R. Blewitt, writing from Jhansie and Saugor, and detailing his experiences there and in the Dehli District,s ays :—"The Common Indian Grey Shrike breeds from February to July; it builds on trees; if it has a preference, it is for the close-growing "Roonj" tree (*Acacia leucophlœa*). I have particularly noticed this fact both here and at Gurhi Hursroo. The nest in structure is neat and compact (though I have occasionally seen some very roughly put together), and generally well fixed into the forks of an off-shooting branch. In shape it is circular, varying from 5 to 7½ inches in diameter, and from 1½ to 3½ inches in thickness; thorn twigs, coarse grass, grass-roots, old rags, &c., form the outer materials of the nest, and closely interwoven fine grass and roots the border rim. The egg cavity is deeply cup-shaped, from 3½ to 5 inches in diameter, and lined with fine grass and khus; exceptionally shreds of cloth are interwoven with the khus and grass.

"On one occasion I got a nest with the cup interior entirely lined with old cloth pieces, very cleverly and ingeniously worked into the exterior frame-work. Five is the regular number of eggs, though at times six have been obtained in one nest. The birds often make their own nests each year, but this is not invariably the case. When at Gurhi Hursroo in February last, I found on an isolated "Roonj" tree four nests within a foot of each other. The under centre one, an *old* shrike nest (the other three were of other birds), was occupied by a shrike sitting on five eggs. I very carefully examined it, and my impression at the time was, that the parent birds had returned, to rear a second progeny, to the nest constructed by them the year previous.

"I do not know whether you have noticed the fact, but both *L. lahtora* and *erythronotus* often lay in old nests, of which they first carefully repair the egg cavity with new materials. It is not only however in old nests of their own species that these birds make a home in the breeding season. At times they take possession of fabrics clearly not the work of any shrike. Quite recently I found a pair of *lahtoras* with four eggs in a small nest entirely woven of hemp, the bottom of which was thickly coated with the droppings of former occupants. Again, on the 8th June, a nest with four eggs was found on a 'Roonj' tree. This wonderful nest which I have kept is entirely composed of what I take to be old felt and feathers, the bottom of the cavity of which, when found, was almost covered with the dung of young birds.

"Evidently this nest was not *originally* made by the shrike, but, as would appear, was taken possession of by it, after the brood of some other species of birds had left it."

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range: "Lays in the last week of March to the end of April. Eggs five only, shape ovato-pyriform, size 1·06 inch by 0·8 inch, color pale greenish-white, blotched and tinged with yellowish-grey and neutral markings; vary much in intensity and color. Nest of twigs, lined with cotton or wool, and usually placed in stiff thorny bushes."

Mr. W. Blewitt says that he "took four nests of this bird near Hansee on the 28th-30th March; they contained, one 5, two 4, and one 3 eggs; all but the latter (which curiously enough were a good deal incubated) quite fresh. The nests were placed in Acacia and Caper bushes, at heights of from 6 to 14 feet from the ground; they were from 6 to 7 inches in diameter exteriorly, rather loosely constructed of thorny twigs, with egg cavities from 2 to 2½ inches deep, lined with fine straw and leaves." Again he writes: "took numerous nests in the neighbourhood of Hansee during the month of July; most of the eggs were much incubated, and four was the largest number found in any one nest.

"The nests were all placed upon Keekur trees at an average height of some 10 feet from the ground; they were composed of thorny twigs, some with and some without a lining of fine grass and feathers, and averaged some 5 or 6 inches in diameter by 2 to 4 inches in depth."

This Shrike is essentially a plains bird, and never seems to ascend the Nilghiris or Himalayas to any elevation. I have never found a nest more than 1,500 feet above the level of the sea.

Typically, the eggs are of a broad oval shape, more or less pointed towards one end, of a delicate greenish-white ground, pretty thickly blotched and spotted with various shades of brown and purple markings, which, always most numerous towards the large end, exhibit a strong tendency to form there an ill-defined zone or irregular mottled cap. The variations, however, in shape, size, color, extent, and intensity of markings are very great; and yet, in the huge series before me, there is not one that an oologist would not at once unhesitatingly set down as a Shrike's. In some the ground-color is a delicate pale sea-green. In some it is pale stone color; in others creamy, and in a few it has almost a pink tinge. The markings, commonly somewhat dull and ill-defined, are occasionally bold and bright, and in color they vary through every shade of yellowish, reddish, olive, and purplish-brown, while, subsurface-looking, pale, purple clouds are intermingled with the darker and more defined markings. In one egg the markings may be almost exclusively confined to a broad, very irregular zone of bold blotches near the large end. In others the whole surface is more or less thickly dotted with blotches and spots, so closely crowded towards the large end as almost wholly to obscure the ground-color there. As a rule, the markings are irregular blotches of greater or less extent, but occasionally these blotches form the exceptions, and the majority of the markings are mere spots and specks. In some eggs the purple cloudings greatly predominate. In others scarcely a trace of them is observable. Some eggs are comparatively long and narrow, while some are pyriform and blunt at both ends; and yet, notwithstanding all these great differences, there is a strong family likeness between all the eggs. In size they are, I think, somewhat smaller than those of *C. excubitor.*

They vary in length from 0·9 to 1·17 inch, and in width from 0·75 to 0·83 inch, but the average of more than fifty eggs is 1·03 by 0·79 inch.

257.—*Collyrio erythronotus, Vig.*

The Rufous-backed Indian Shrike lays from March to August; the first half of this period being that in which the majority of these birds lay in the Himalayas, which they ascend to elevations of 6,000 feet, and the latter half being that in which we find most eggs in the plains, but in both hills and plains some eggs may be found throughout the whole period above indicated.

The nests of this species are almost invariably placed on forks of trees or of, their branches at no great height from the ground; indeed, of all the many nests that I have myself taken, I do not think that one was above 15 feet from the ground. By preference they build, I think, in thorny trees, the various species of Acacia, so common throughout the plains of India, being apparently their favorite nesting haunts, but I have found them breeding on Toon (*Cedrela toona*) and other trees. Internally the nest is always a deep cup, from 3 to 3¼ inches in diameter, and from 1¾ to 2⅛ deep. The cavity is always circular and regular, and lined with fine grass. Externally the nests vary greatly; they are always massive, but some are compact and of moderate dimensions externally, say not exceeding 5½ inches in diameter, while others are loose and straggling, with a diameter of fully 8 inches. Grass stems, fine twigs, cotton-wool, old rags, dead leaves, pieces of snake's skin, and all kinds of odds and ends are incorporated into the structure, which is generally more or less strongly bound together by fine tow-like vegetable fibre. Some nests indeed are so closely put together that they might almost be rolled about without injury, while others again are so loose that it is scarcely possible to move them from the fork in which they are wedged without pulling them to pieces.

I have innumerable notes about the nests of this Shrike, of which I reproduce two or three. "*Etawah, March 18th.*—The nest was on a Babool tree, some 10 feet from the ground, on one of the outside branches; an exterior frame-work of very thorny Babool twigs, and within a very warm deep circular nest made almost entirely of Sun (*Crotalaria juncea*) fibre, a sort of fine tow, and flocks of cotton-wool, there being fully as much of this latter as of the former; a few fine grass stems are interwoven; there are a few human and a few sheep's wool hairs at the bottom as a sort of lining. The cavity of the nest is about 3 inches in diameter by 2 deep, and the side walls and bottom are from 1½ to 2 inches thick."

"*May 27th*, 1867, *Bareilly.*—Found a nest containing two fresh eggs. The nest was in a small Mango tree, rather massive, nearly 2 inches in thickness at the sides and 3 inches thick at the bottom. It was rather stoutly and closely put together, though externally very ragged. The interior neatly made of fine grass stems, the exterior of coarser grass stems and roots, with a quantity of cotton-wool, rags, tow string and thread intermingled. The cavity was oval, about 3½ by 3 inches and 2 inches deep".

"*August 21st, Agra.*—Mr. Munro sent in from Bitchpoorie a beautiful nest which he took from the fork of a Mango tree about 40 feet from the ground, a very compact and massive cup-shaped nest, not very deep."

Mr. F. R. Blewitt records the following note:—

"Breeds from March to August, on low trees, and, as would appear, without preference for any one kind.

"The nest in shape much resembles that of *Lanius lahtora*; but judging from the half dozen or so I have seen, *erythronotus* certainly displays more skill and ingenuity in preparing its nest, which in structure is more neat and compact than that of *lahtora*. In shape it is circular, ordinarily varying from 5½ to 7 inches in diameter, and from 2 to 2½ inches in thickness. Hemp, old rags, and thorny twigs are freely used in the formation of the outer portion of the nest, but the Shrike shows a decided predilection for the former. In one nest I observed the cast skin of a snake worked in with the outer materials; in two others some kind of vegetable fibre was used to bind and secure the thorn twigs, and one had the margin made of fine Neem tree twigs and leaves. The egg cavity is deeply cup-shaped, from 3 to 4 inches in diameter, and *lined* usually with fine grass. Five appears to be the regular number of eggs, but on this score I cannot be very certain, seeing that my experience is confined to some half dozen or so of nests.

"I have recently reared three young birds, and it is very amusing to witness their many antics, shrewdness, and intelligence. They are very tame, flying in and out of the bungalow at pleasure; when irritated, which is rather a failing with them, they show every sign of resentment. If one is inclined to be rebellious, not coming to call, the show of a piece of meat at once secures its submission and capture. Singular how partial they are to raw meat, and more singular to see the expert way in which they catch up the meat with the claws of either leg, and hold it from them while they devour it piecemeal. I saw the other evening an old bird pounce on a field mouse, kill it, and then bring and cleverly fix the victim firmly between the two forks of a branch and pull it in pieces. It eat but a part of the mouse."

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range: "Lay in May; eggs five to six; shape blunt, ovato-pyriform; size varies from 0·88 to 0·93 of an inch in length, and from 0·68 to ·81 of an inch in breadth. Color, white or pale greenish-white, slightly ringed and spotted with yellowish-grey and neutral tint. Nest of roots, coarse grass, rags, cotton, &c., lined with fine grass, and placed in forks of trees."

Captain Hutton, who recognizes the distinctions between this species and the next, says:—

"This is an abundant species in the Doon, but is found also within the mountains up to about 5,000 feet. In the Doon I took a nest on the 28th June containing four eggs. It is composed of grass and fine stalks of small plants roughly put together, bits of rag, shreds of fine bark, and lined with very fine grass-seed stalks; internal diameter 3 inches; external 6 inches; depth 2½ inches."

Mr. E. C. Buck notes having taken a nest containing four hard-set eggs, on the 22nd of June, far in the interior of the Himalayas, at Niratu, north-east of Kotgurh. The nest was in a "Tuhar" tree, and was composed externally of grass-seed ears, internally of finer grass; a very different-looking nest from any I have elsewhere seen, but he forwarded the bird and eggs; so that there could be no mistake.

From Murree, Captain C. H. T. Marshall writes:—

"Found numerous nests in the valleys in May and June, between 4,000 and 5,000 feet up."

From four to six eggs are laid, and in regard to this Shrike, I have had no reason to think that it rears more than one brood in the year.

I have so fully described the eggs of *C. lahtora*, of which the eggs of this present species are almost miniatures, that I need say but little in regard to these. On the whole, the markings in this species are, I think, feebler and less numerous than in *lahtora*; and though this would not strike one in the comparison of a few eggs in each, it is apparent enough when several hundreds of each are laid side by side, four or five abreast, in broad parallel rows. The ground-color, too, in *erythronotus* has seldom, if ever, as much green in it, and has commonly more of the pale creamy or pinky stone color than in the case of *lahtora*.

In size the eggs of *erythronotus* appear to approach those of the English Red-backed Shrike, though they average perhaps somewhat smaller.

In length they vary from 0·85 to 1·05 inch, and in breadth from 0·65 to 0·77 inch, but the average of more than one hundred eggs measured is 0·92 by 0·71 inch.

257 bis.—*Collyrio caniceps, Blyth.*

This closely allied species, the Pale Rufous-backed Shrike, breeds only, so far as I yet know, in the Nilghiris, Pulneys, &c., the Rajmahal Hills, the Aracan Hills, and the Sub-Himalayas.

It lays from March to July, the majority, I think, breeding in June.

Its nest is very similar, and is similarly placed to that of the preceding, from which, if it differs at all, it only differs in being somewhat smaller.

It lays from four to six eggs, slightly more elongated ovals than those of *erythronotus* taken as a body, but not, in my opinion, separable from these when mixed with a large number.

Captain Hutton, however, does not concur in this: he remarks:—

"This species, which is very common in Afghanistan, occurs also in the Doon and on the hills up to about 6,000 feet. At Jeripanee I took a nest on the 21st June containing five eggs, of a pale livid white colour, sprinkled with brown spots, chiefly collected at the larger end, where, however, they cannot be said to form a ring; interspersed with these are other dull sepia spots appearing beneath the shell. Diameter 0·94 by 0·69 inch, or in some rather more. Shape rather tapering ovate.

"The differences perceptible between this and the last are the much smaller size of the spots and blotches, the latter, indeed, scarcely existing, while in *L. erythronotus* they are large and numerous; there is great difference likewise in the shape of the egg, those of the present species being less globular or more tapering. The nest was found in a thick bush about 5 feet from the ground, and was far more neatly made than that of the foregoing species; it is likewise less deep internally. It was composed of the dry stalks of 'Forget-me-not,' compactly held together by the intermixture of a quantity of moss interwoven with fine flax and seed-down, and lined with fine grass stalks. Internal diameter 3½ inches; external 6 inches; depth 1½ inch, forming a flattish cup, of which the sides are about 1½ inch thick. The depth, therefore, is less by 1 inch than in that of the last-mentioned nest."

Mr. H. R. P. Carter tells me that "at Coonoor, on the Nilghiris, this species breeds in April and May, placing its nest in large shrubs, orange trees, and other low trees which are thick and leafy. The nest is externally irregular in shape, and is composed of fibres and roots mixed with cotton-wool and rags; in one nest I found a piece of lace, 6 or 8 inches long; internally it is a deep cup, some 4 inches in diameter, and 2 in depth; the eggs are sometimes three in number, sometimes four."

Mr. Wait says that "the breeding season extends from March to July in the Nilghiris; the nest, cup-shaped and neatly built, is placed in low trees, shrubs, and bushes, generally thorny ones; the outside of the nest is chiefly composed of weed (a white downy species is invariably present), fibres and hay, and it is lined with grass and hair; there is often a good deal of earth built in, with roots and fibres in the foundation of this nest; four appears to be the usual number of eggs laid."

Miss Cockburn from Kotagherry, also on the Nilghiris, tells me that "the Pale Rufous-backed Shrike builds in the months of February and March and forms a large nest, the foundation of which is occasionally laid with large pieces of rags, or (as I have once or twice found) pieces of carpet. To these they add sticks, moss, and fine grass as a lining, and lay four eggs, which are white, but have a circle of ash-coloured streaks and blotches at the thick end, resembling those on Fly-catcher's eggs. They are exceedingly watchful of their nests while they contain eggs or young, and never go out of sight of the bush which contains the precious abode."

Mr. Davison remarks that "this species builds in bushes or trees at about 6 to 20 feet from the ground; a thorny thick bush is generally preferred, *Berberis asiatica* being a favourite. The nest is a large deep cup-shaped structure, rather neatly made of grass, mingled with odd pieces of rag, paper, &c., and lined with fine grass. The eggs, four or five in number, are white, spotted with blackish-brown, chiefly at the thicker end, when the spots generally form a zone. The usual breeding season is May and the early part of June, though sometimes nests are found in April and even as late as the last week in June, by which time the south-west monsoon has generally burst on the Nilghiris."

The eggs of this species, sent me by Captain Hutton from the Doon and by numerous correspondents from the Nilghiris, are undistinguishable from many types of *C. erythronotus,* and indeed the birds are so closely allied that this was only to be expected. It is unnecessary to describe these at length, as my description of the eggs of *erythronotus* applies equally to these.

In size the eggs, however, vary less, and *average* longer than those of this latter species. In length they range from 0·93 to 1·0 inch, and in breadth from 0·7 to 0·72 inch, but the average of twenty was 0·95 by 0·7 inch.

258.—*Collyrio tephronotus, Vig.*

As far as I yet know, the Grey-backed Shrike breeds, within our limits, only in the Himalayas, and chiefly in the interior, at heights of from 5,000 to 8,000 feet above the sea level. In the interior of Sikhim, in the Sutlej valley near Chini, in Lahoul, and well up the valley of the Beas, they are pretty common during the summer; they lay from May to July, and the young are about by the end of July or the early part of August. I have never seen a nest, although I have had eggs and birds sent me from both Sikhim and the Sutlej Valley. There were only two eggs in each case, but doubtless, like other Shrikes, they lay from four to six.

Dr. Stoliczka remarks that *tephronotus* is "common at Láchúng, 8,000 to 9,000 feet, in the beginning of September, but three weeks later all had disappeared. Many of those seen were in young plumage, with hair on the breast, back, and scapulars."

Captain C. H. T. Marshall records from Murree: "This species much resembles *L. erythronotus,* but the eggs differ considerably, being more creamy-white, blotched and spotted (more particularly at the larger end) with pale red and grey. They are the same size as those of the preceding species. Lays in the beginning of July at the same elevation as *L. erythronotus.*"

As to the size I cannot concur with the above.

The eggs I have received of this species from Darjeeling and the Sutlej valley closely resemble ordinary types of *L. lahtora,* but are, I think, slightly smaller. They are rather broad eggs, oval at the one end, a good deal pointed at the other, and, like those of all our Indian Shrikes, devoid of gloss. The ground-colour is a very pale creamy stone colour, and they are pretty thickly spotted and blotched all over with pale, somewhat olive-brown and faint dingy purple. The markings are, as usual, most numerous towards the large end, and in some of them have a tendency to form a mottled zone there. These eggs approach nearest in size (I think) to those of the Wood-chat Shrike. They are considerably larger than those of *erythronotus,* and smaller, I should say, than those of *lahtora.*

In length four eggs vary from 0·97 to 1·06 inch, and in breadth from 0·76 to 0·81 inch.

Captain Marshall has since kindly sent me two of the eggs above referred to; they are clearly, it seems to me, eggs of *Buchanga longicaudatus,* or the slightly smaller hill-form named *himalayanus,* Tytler.

259.—*Collyrio nigriceps, Frankl.*

I have never myself taken the eggs or nests of the Black-cap Shrike.

Mr. R. Thompson says: "This Shrike breeds all along the south-western termination of the Kumaon and Gurhwal forests, and is usually found in swampy, high-grassy, lands. It lays in July, August, and September, building a large cup-shaped nest, composed of roots and fine grasses, in small trees or shrubs in low, open grass-covered country.

"I found this the common Shrike in the hilly jungly tracts in Southern Mirzapore, but I do not known whether it breeds there. The cry is quite like that of *erythronotus*.

"The southern limit of *Lanius nigriceps* is interesting and remarkable. It disappears after you go south-west of the Mykle Range, and on the Range itself it is found only near marshy places. This Mykle Range extends as far east as Ummerkuntuk, with a spur going off north of that, and joining on with the Kymore Range, parts of which I explored in March last in Pergunnahs Agrore and Singrowlee. Down in those places this *Lanius* was the common Shrike, but south and west of Ummerkuntuk all the Shrikes disappear more or less, and *nigriceps* entirely."

According to Mr. Hodgson's notes and figures, this species breeds in the valley of Nepal, laying in April and May, and building in thorny bushes, hedges and trees, often in the immediate neighbourhood of villages. The following are two of Mr. Hodgson's notes: "Valley, May 18th.—Nest near the top of a fir of mean size, fixed securely in the midst of several diverging branches, made compactly of dry grasses, of which the inner ones, which constitute the lining, are hard and elastic, and well fitted to preserve the shape, which is a deep cup with an internal cavity 3·5 inches in diameter and nearly 3 deep. It contained six eggs, milk-and-water white, with pale olive spots, chiefly at the large end, measuring 0·95 by 0·68 inch.

"May 16th Jahar Powah.—Ascent of Sheopoori, skirts of large forests; nest on lateral branches of a large tree made of downy tops of plants, of moss and thick grasses, strongly compacted, and lined with fine elastic hair-like grass; the cavity is circular, 3 inches in diameter by more than 2 inches in depth; the whole nest is a solid deep cup; it contained four eggs, bluish-white, with gray-brown remote spots."

Of another nest he gives the dimensions as external diameter 4·25 inches; external height 3·87; internal diameter 2·87; depth of cavity 2·75. He figures it as a very compact and deep cup resting on a horizontal fir branch between four or five upright sprays. He states that the young are ready to fly towards the end of June, and that it breeds only once a year.

Mr. Gammie found a nest of this species on the 17th May at Mongfoo, near Darjeeling, at an elevation of 3,500 feet. The nest was placed in a Wormwood bush, and was supported between several slender upright shoots to which the exterior of the nest was more or less attached. The nest was a deep, compact cup, externally composed of fine twigs, scraps of roots and stems of herbaceous plants, intermingled with a great deal of flowering grass. Internally it was lined with very fine grass and moss roots. The cavity measured about 3 inches in diameter, and was fully 2 inches deep. The external diameter was about 5 inches, and height 3½ or thereabout.

The nest contained four hard-set eggs rather small for the size of the bird, but thoroughly typical Shrike's eggs. In shape they are regular ovals, slightly more pointed towards one end. The texture of the shell is smooth and fine, but there is scarcely any gloss. The ground colour varies from pale-creamy to pale-greenish white, and the egg is speckled and spotted with pale olive-brown and pale purplish-dusky. The markings are sparse and small, but they are somewhat larger and considerably more dense in a broad ring round the large end, and here it is that most of the dusky purplish spots occur. The eggs vary from 0·92 to 0·95 inch in length, and from 0·7 to 0·73 inch in breadth.

260.—*Lanius vittatus*, *Dum.*

Hardwicke's Shrike breeds throughout the plains of India and in the Sub-Himalayan Ranges up to an elevation of fully 4,000 feet.

The laying season lasts from April to September, but the great majority of eggs are found during the latter half of June and July ; in fact, according to my experience, the great body of the birds do not lay until the rains set in.

The nests are placed indifferently on all kinds of trees (I have notes of finding them on Mango, Plum, Orange, Tamarind, Toon, &c.,) never at any great elevation from the ground, and usually in *small* trees, be the kind chosen what it may. Sometimes a high hedgerow, such as our great Custom's hedge, is chosen, and occasionally a solitary Caper or stunted Acacia bush.

The nests (almost invariably fixed in forks of slender boughs) are neat, compactly and solidly built cups, the cavities being deep and rather more than hemispherical, from 2·25 to fully 3·5 inches in diameter, and from 1·5 to 2 inches in depth. The nest walls vary from 0·5 to 1·25 inch in thickness. The composition of the nest is various. The following are brief descriptions which I have noted from time to time :—

"Compactly woven of grass stems and a few fine twigs, but with more or less wool, rag, cotton, or feathers incorporated ; there *is no lining.*

"The nest was rather massive, externally composed of wool, rags, cotton, thread and feathers, and a little grass ; the cavity rather neatly lined with fine grass.

"Composed almost entirely of cobweb, with a few soft feathers, wool string, rags, and a few pieces of very fine twigs compactly woven. The interior was lined with fine straw and fibrous roots."

Elsewhere I have recorded the following note on the nidification of this species :—

"This bird, or rather birds of this species, have been laying ever since the middle of April, but nests were then few and far between, and now in July they are common enough. The nest that we had just found was precisely like twenty others that we had found during the past two months. Rather deep, with a nearly hemispherical cavity ; very compactly and firmly woven of fine grass, rags, feathers, soft twine, wool, and a few fine twigs, the whole entwined exteriorly with lots of cobwebs, and the interior cavity about $1\frac{3}{4}$ inch deep by $2\frac{1}{4}$ in diameter, neatly lined with very fine grass, one or two horse-hairs, shreds of string, and one or two soft feathers. The walls were a good inch in thickness. The nest was placed in a fork of a thorny Jujube or Ber tree (*Zizyphus jujuba*) near the centre of the tree, and some 15 feet from the ground. It contained four fresh eggs, feebly coloured minatures of the eggs of *C. lahtora*, which latter so closely resemble those of *C. excubitor* that if you mixed the eggs, you could never, I think, certainly separate them again. The eggs exhibit the zone so characteristic of those of all Shrikes. They have a dull pale ground, not white, and yet it is difficult to say what colour it is that tinges it; in these four eggs it is a yellowish stone colour, but in others it is greenish, and in some grey; near the middle, towards the large end, there is a broad and conspicuous, but broken and irregular, zone of feeble, more or less confluent spots and small blotches of pale yellowish-brown and very pale washed-out purple. There are a few faint specks and spots of the same colour here and there about the rest of the egg. In some eggs previously obtained the zone is quite in the middle, and in others close round the large end. In some the colours of the markings are clear and bright, in others they are as faint and feeble as one of our modern Manchester warranted-fast-coloured muslins, after its third visit to a native washerman. In size, too, the eggs vary a good deal.

"The little Shrike had a great mind to fight for his *penates*, and twice made a vehement demonstration of attack, but his heart failed him, and he retreated to a neighbouring Mango branch, whence a few minutes after we saw him making short dashes after his insect prey, apparently oblivious of the domestic calamity that had so recently befallen him."

Mr. F. R. Blewitt, then at Gurhi Hursroo, near Dehli, sent me some years ago the following interesting note:—

"Breeds from March to at least the middle of August. It builds its nest in low trees and high hedgerows, preferring the former.

"In shape the nest is circular, with a diameter, outside, of from 5½ to 6½ inches, and from 1·5 to 2 in thickness.

"For the exterior frame-work thorny twigs, old rags, hemp, thread-pieces, and coarse grass are more or less used, and compactly worked together. The egg cavity is deep and cup-shaped, lined with fine grass and khus; pieces of rag or cotton are sometimes worked up with the former.

"Five to six is the regular number of eggs. In colour they are a light greenish-white, with blotches and spots generally of a light, but sometimes of a darker, reddish brown. The spots and blotches vary much in size, and they are mostly confined to the broad and upper end of the eggs.

"I had frequently noticed on a tree in the garden an *old* Shrike nest. It was in the beginning of May that a male bird suddenly made his appearance and established himself in the garden, and morning and evening without fail did he sit and alternately chatter and warble away for hours. His perfect imitation of the notes of other birds was remarkable.

"In the beginning of June his singing suddenly ceased, the secret of which I soon discovered. He had secured a mate, and daily did I watch for the nest, which I thought they would prepare. Late on the evening of the 23rd June, happening to look up at the *old* nest, to my surprise I found it occupied by the female, the male the while sitting on a branch near her. Next morning on searching the nest I found four eggs. Whether this nest was prepared the year previous by these birds or by another pair I cannot tell.

"That day, the day of the robbery, the female disappeared. The male followed next day, but only to return after two or three days, and recommence with renewed energy his chattering and warbling. This he continued daily till near the end of July, when, as before, he suddenly ceased to sing. I then found that he had again secured a mate, whether the old female or a new bride I am not certain; they soon set about making a nest on a neighbouring tree, very cunningly, as I thought, selected; and now the young birds reared are nearly full-fledged. An old nest, evidently of last year's make, was brought me the other day with five eggs, but the *lining*, as by the way was done in the one in the garden, had been wholly removed and *new* grass and khus substituted."

Mr. R. M. Adam says: "This species breeds about Sambhur in July. On the 1st August I saw numbers of nests and fledglings in the Marot jungle."

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lays from the commencement of May to the middle of June. Eggs three to four in number; shape vary from ovato-pyriform to blunt ovato-pyriform, and measuring from 0·73 to 0·87 inch in length and from 0·55 to 0·65* inch in breadth. Colour, same as *L. erythronotus*, also creamy or yellowish-white, spotted with darker. Nest compact, in forks of thorny trees; outside fibrous stalks, bound with silk or spider web, and covered with lichens or cocoons, imitating a weathered structure; inside lined with fine grass and vegetable down."

Captain C. H. T. Marshall, writing from Murree, says: "These little Shrikes breed in the hills, as well as the plains, up to 5,000 feet high."

The eggs of this, the smallest of all our Indian Shrikes, differ in no particular, so far as shape, colour, and markings go, from those of its larger congeners; that is to say, for every egg of this species an exactly similar one might be picked out from a large series of *lahtora* or *erythronotus;* but at the same time there is no doubt that pale-creamy and pale-brownish stone-coloured grounds predominate more amongst the eggs of this species than in those of the two above-named. The markings are also, as a rule, more minute and less well-defined; indeed, in the large series I possess, there is not one which exhibits the bold sharp blotches common in the eggs of *lahtora,* and not uncommon in those of *erythronotus.* In size the eggs appear to be very similar to those of *C. nubicus* of Europe and Africa.

In length they vary from 0·75 to 0·95 inch, and in breadth from 0·62 to 0·71 inch, but the average of forty-five eggs is 0·83 by 0·66 inch nearly.

261.—*Lanius cristatus, Lin.*

I am induced to notice this species, The Brown Shrike, although I possess no detailed information as to its nidification, in consequence of Lord Walden's remarks on this subject in the Ibis of 1867. He says, "does it then cross the vast ranges of the Himalaya in its northern migration? or does it not rather find on the southern slopes and in the valleys of those mountains all the conditions suitable for nesting?" and he adds in a note, "it is extremely doubtful whether any passerine bird, which frequents the plains of India during the cooler months, crosses to the north of the Snowy Ranges of the Himalaya after quitting the plains to escape the rainy season or the intense heat of summer."

Now, it is quite certain, as I have shown in "Lahore to Yarkand," that several of our Indian passerine birds do cross the entire succession of Snowy Ranges which divide the plains of India from Central Asia, and it is tolerably certain from my researches and those of numerous contributors that *L. cristatus* breeds *only* north of these ranges. True, Tickell gives the following account of the nidification of this species in the plains of India:—

"Nest found in large bushes or thickets, shallow, circular, 4 inches in diameter, rather coarsely made of fine twigs and grass. Eggs three, ordinary; $\frac{29}{32}$ by $\frac{21}{32}$, pale rose colour, thickly sprinkled with blood red spots, with a darkish livid zone at the larger end.—*June.*" But Tickell, though he warns us at the commencement of his paper (Journal, As. Soc., 1848, p. 297), of the 'attempts at duplicity of which the wary oologist must take good heed,' gives the Sarus egg as plain white, and says he has seen upwards of a dozen like this, those of the Roller as full deep Antwerp blue, those of *Cypselus palmarum* as white with large spots of deep claret-brown, and so on, and it is quite clear that his supposed '*cristatus*' eggs and nest belonged to one of the Bulbuls.

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* I think that there must be some error in these dimensions, for mine are taken from forty-five specimens, the largest and smallest, out of some hundreds of eggs.

Of more than fifty oologists who have collected for me at different times in hills and plains, from the Nilghiris to Huzara on the one side, and to Sikhim on the other, not one has ever met with a nest of *cristatus*. This is doubtless purely negative evidence, but it is still entitled to considerable weight.

From the valleys of the Beas and the Sutlej, as also from Kumaon and Gurhwal, they seem to disappear entirely during the summer, and they are then, as we also know, found breeding in Yarkand. It is only in the latter part of the autumn that they re-appear in the former named localities, finding their way by the commencement of the cold season to the foot of the hills.

Mr. R. Thompson, to quote one of many close observers, remarks:—

"This bird appears regularly at Huldwanee and Ramnugger at the foot of the Kumaon Hills during the cold weather, confining itself to thick hedges and deep groves of trees. Where it goes to in summer I cannot say, it certainly does not remain in our hills."

265.—*Tephrodornis pondiceriana, Gm.*

The Common Wood-shrike lays during the latter half of March and April. This at least is, I think, the normal season, but Mr. W. Blewitt found a nest at Hansee on the 2nd of June containing two fresh eggs.

I have only taken one nest myself (though I have had many others sent me), and that was on the 2nd of April at Chundowah in Jodpoor, Rajpootana. The nest was in the fork of a Ber tree (*Zizyphus jujuba*) on a small horizontal bough, about 5 feet from the ground. It was a broad shallow cup, somewhat oval interiorly, with the materials very compactly and closely put together. The basal portion and frame-work of the sides consisted of very fine stems of some herbaceous plant, about the thickness of an ordinary pin. It was lined with a little wool and a quantity of silky fibre; exteriorly it was bound round with a good deal of the same fibre and pretty thickly felted with cobwebs. The egg cavity measured 2·5 inches in diameter one way and only 2 the other way, while in depth it was barely ·86. The exterior diameter of the nest was about 4 inches and the height nearly 2 inches. It contained three fresh eggs, of a slightly greyish-white ground, very thickly spotted and speckled, with yellowish-brown, dark umber-brown, and a pale washed-out inky-purple. In all, the spots were thickest in a zone round the large end, where they became more or less confluent. I have, however, a large series of these nests, and taking them as a whole, although much more massive, they remind one no little of those of *Leucocerca aureola* and *Tchitrea paradisi* and even *Iora zeylonica*. They are broad shallow cups, measuring internally $2\frac{1}{4}$ inches across and about $\frac{7}{8}$ inch in depth. They are placed in the horizontal fork of a branch, and are composed of vegetable fibre and fine grass-roots thickly coated externally with cobwebs, by which also they are fixed on to branches, and lined internally with silky vegetable down or fibre. Externally their color always approximates closely to the bark of the branch on which they are placed; they are not thin basket-like structures like those of the *Ioras* or *Leucocercas*, but are fully ½ inch thick at the sides and probably ¾ inch thick at the bottom.

Captain G. F. L. Marshall writes: "The Common Wood-shrike builds in the Saharunpoor District in the latter half of March, the young being hatched early in April. The bird is common; but owing to the small size and bark-like colour of its nest, the latter is very difficult to find. On the 8th April I fired at a specimen and missed it; it then flew off and settled in a fork of another tree about 30 feet from the ground. On looking carefully with an opera-glass I found that it was sitting on its nest. I drove it off and shot it; the nest was very small and shallow, cup-shaped, and wedged in between two small boughs at their junction, and not appearing either above or below. The egg receptacle was 2¼ inches in diameter; the nest was made of grass and bits of bark, beautifully woven together and bound with cobwebs, and exactly resembling the boughs between which it was placed, or, I might say, wedged in. The eggs, four in number, were slightly set; they were small for the bird, and of a rather round oval shape; the colour was a creamy yellow-ground, thickly spotted and blotched with the different shades of brown and sienna, the bulk of the spots tending to form a zone near the thick end, as in the typical form of the eggs of the *Laniadæ*, and a number of faint purple blotches underlying the zone."

The late Captain Beavan remarks that this bird "appears to come to the Maunbhoom District for the purpose of breeding. I procured the nest and eggs early in April, and the young were nearly fledged by the 20th of that month; they appear to come year after year to particular localities to breed.

"Several nests were brought me from the neighbourhood of Kashurghur both in 1864 and 1865, whereas none were seen elsewhere. The nest is very small for the size of the bird, and the material of which it is composed closely resembles the bird's plumage in colour. The nest is round and very shallow, something like a Chaffinch's, being very neatly made; diameter inside 2 inches, depth 1 inch; composed of grey fibres, bits of bark, grass, and the like, cemented with spider's web. The eggs are two in number, greenish-white, spotted with brown and slate-coloured dots, which in most specimens form a well defined zone round the thickest part of the egg, leaving both ends without marks. Length of the egg ·75 inch; breadth ·59 inch; this bird was not observed in Maunbhoom, except during the breeding season."

Dr. Jerdon remarks: "The nest has been brought to me in August at Nellore, chiefly made of roots and lined with hair; and the eggs, three in number, were greenish-white with large brown blotches."

The eggs are very Shrike-like in appearance, and many of them are perfect miniatures of the eggs of *Lanius lahtora*, but some of them have a more uniformly brown tint than any of this latter species that I have yet met with. The ground colour is generally either a very pale greenish-white or a creamy stone colour, and more or less thickly spotted and blotched with different shades of yellowish and reddish-brown; many of the markings are almost invariably gathered into a conspicuous, but irregular and ill-defined, zone near the large end, in which zone clouds of subsurface-looking, pale, and dingy-purple, not usually observable on any other portion of the egg, are thickly intermingled. The texture of the shell is fine and close, but scarcely any gloss is ever perceptible. Occasionally the eggs are very faintly coloured, and have a dull white ground, while the markings consist of only a few spots and specks of very pale purple and pale rust colour confined to a zone near the large end.

In length the eggs vary from 0·69 to 0·8 inch, and in breadth from 0·57 to 0·65 inch, but the average of a dozen eggs is 0·75 by 0·61 inch nearly.

267.—*Hemipus picatus*, Hodgs.

I must premise that to the best of my belief there is no such thing as *H. capitalis*, McClell., in India, or, in other words, that this latter name is a mere synonyme of the present species.

Mr. Blyth remarks, Ibis 1866, "*Hemipus picatus*—Under this name two very distinct species are brought together by Dr. Jerdon.

"*H. capitalis* (McClell., 1839; *H. picæcolor*, Hodgson, 1845,) of the Himalaya, which is larger, with proportionally longer tail, and has a brown back; and *H. picatus* (Sykes) of Southern India and Ceylon, which has a black back. Mr. Wallace has good series of both of them.

"*Hemipus capitalis* has accordingly to be added to the birds of India."

Now, out of India, Mr. Wallace may have got hold of some brown-backed *Hemipus*, which is really distinct, but nothing is more certain (I speak after comparison of a large series from Southern India with a still larger, gathered from all parts of the Himalayas) than that the Southern and Northern Indian birds are identical, and that in both localities the males have black and the females brown backs.

Now, this has an important bearing on the question of nidification, or I should not have noticed it here. From Northern and Southern India I have received two utterly different types of eggs. So long as I believed the birds on Blyth's authority to be distinct, this caused me no difficulty; but when a careful comparison of more than fifty specimens proved that both Northern and Southern Indian birds were absolutely identical, I was reluctantly compelled to admit that one or other of my contributors must be in error. Let them each tell their own tale; all I know is that the two sets of eggs never could have belonged to the same species; shape, texture, colour, all are widely different. Captain T. Hutton says:—

"On the 12th of May I procured a nest of this bird in the Dehra Doon; it was placed on the ground at the base of an overhanging rock, and was composed entirely of the hair of horses and cows and other cattle, which had doubtless been collected from the bushes and pasture lands in the vicinity. There were four eggs of a pale sea-green, spotted with rufous brown, and forming an indistinct and nearly confluent ring at the larger end. The bird had begun to sit.

"This curious little species is not uncommon in the outer hills up to 5,000 feet in the summer months."

The three eggs sent me by Captain Hutton appear to differ somewhat conspicuously from any other eggs of the *Lanaidæ* that I have yet seen. The ground colour is a very pale greenish-white, and they are moderately thickly freckled and mottled all over, but most densely towards the large end, where, in one egg, there is a well-marked, though somewhat irregular, zone, with pale brownish-pink and very pale purple. In shape the eggs are very regular, rather broad ovals, and appear to have but little or no gloss. They vary in length from 0·66 to 0·7 inch, and in breadth from 0·53 to 0·55 inch.

Dr. Jerdon's evidence, so far as it goes, tallies with Captain Hutton's account. He says: "I obtained its nest once at Darjeeling, made of roots and grasses, with three greenish-white eggs, having a few rusty red spots."

Mr. W. Davison says, on the other hand:—

"About the first week in March 1871, I found at Ootacamund a nest of this bird placed in the fork of one of the topmost branches of a rather tall *Berberis Leschenaulti*. For the size of the bird this was an exceedingly small shallow nest, and from its position between the fork, its size, and the materials of which it was composed externally, might very easily have passed unnoticed; the bird sitting on it appeared to be sitting only on a small lump of moss and lichen, the whole of the bird's tail, and as low down as the lower part of the breast, being visible. The nest was composed of grass and fine roots covered externally with cobweb and pieces of a grey lichen, and bits of moss taken apparently from the same tree on which the nest was built; the eggs were three in number. The tree on which this nest was built was opposite my window, and I watched the birds building for nearly a week, and again when having the nest taken, the bird sat till the native lad I had sent up put out his hand to take the nest. I am *absolutely* certain as to the identity of this nest and these eggs."

Now, the eggs brought me by Mr. Davison, of the authenticity of which he is positive, are very Shrike-like in their appearance; they are rather elongated ovals, somewhat obtuse at both ends, and entirely devoid of gloss. The ground colour is a pale-greenish or greyish-white, and they are profusely blotched, spotted, and streaked with darker and lighter shades of umber-brown; in both eggs these markings are more or less confluent along a broad zone, which in one egg encircles the larger, in the other the smaller end; these eggs measure 0·7 by 0·5 inch, 0·69 by 0·49 inch.

I quite agree with Mr. Gray that this bird is a Fly-catcher and not a Shrike; no one in fact who has watched it in life can have any doubt on this subject, but yet, except for their being more strongly marked, its eggs have no doubt a very Shrike-like character, at the same time that they exhibit many affinities to those of *Leucocerca aureola* and other undoubted Fly-catchers.

268.—*Volvocivora Sykesii, Strickl.*

Mr. F. R. Blewitt is the only person I know who has taken the eggs of Sykes' Cuckoo-shrike. He furnishes the following note:—

"I first met with this bird in the southern part of Bundlekund. Nowhere here is it common, and I have never seen more than a pair together. It is to be found in wooded tracts of country, but more frequently among thin large trees surrounding villages. Dr. Jerdon has correctly described its restless habits, and its careful examination of the foliage and branches of trees for food. It is usually a silent bird, but during the earlier portion of the breeding season, the male bird may frequently be heard repeating for minutes together his clear plaintive notes. Each time, as it flies from one tree to another, the song is repeated. The flight is easy, slightly undulating, and the strokes of the wing somewhat rapid. In the latter end of July I procured one nest. It was found on a Mowa tree, (*Bassia latifolia*) placed on and at the end of two small out-shooting branches. When my man, mounting the tree, approached the nest, the parent birds evinced the greatest anxiety flew just above his head, uttering all the while a sharply repeated cry. Even when one of the birds was shot, the other would not leave the spot, but remained hovering about and uttering its shrill cry. The nest is slightly made, and constructed of thin twigs and roots: the exterior is covered slightly with spider's web. If we except the size, the formation of this Cuckoo-shrike's nest is almost identical with that of *Graucalus Macei.* I secured two eggs in the nest. In colour they are, when fresh, of a deepish green, mottled with dark brown spots; indeed the eggs, when first taken, a good deal resemble those of

Copsychus saularis. The maximum number of eggs, no doubt, is three, as those I secured were fresh-laid. The bird breeds from June to August."

The nest above referred to, and now in my museum, was a very shallow, rather broad cup. The egg cavity about 2½ inches in diameter and about ¾ inch deep, and the nest very loosely put together of very fine twigs and exteriorly coated and bound together with cobwebs. The sides of the nest are about 0·6 inch thick, but the bottom is a mere net-work of slender twigs, not above ¼ inch thick, which can be readily looked through.

I have only seen two eggs of this species, sent me with the nest and parent bird by Mr. F. R. Blewitt. They are oval eggs, moderately broad and obtuse at both ends, about the same size as average eggs of *Lanius vittatus.* They are slightly glossy, have a pale greenish-white ground, and are thickly blotched and streaked throughout, but most densely so towards the large end, with somewhat pale brown, much the same colour as the markings on typical eggs of *L. erythronotus.* They measure 0·85 inch in length by 0·65 and 0·68 inch in breadth respectively.

269.—*Volvocivora melaschistos, Hodgs.*

I have never found the nest of the Dark Grey Cuckoo-shrike. Captain Hutton tells us :—

"This, too, is a mere summer visitor in the hills, arriving up to 7,000 feet about the end of March, and breeding early in May. The nest is small and shallow, placed in the bifurcation of a horizontal bough of some tall oak tree, and always high up; it is composed externally almost entirely of grey lichens picked from the tree, and lined with bits of very fine roots or thin stalks of leaves. Seen from beneath the tree, the nest appears like a bunch of moss or lichens, and the smallness and frailty would lead one to suppose it incapable of holding two young birds of such size. Externally the nest is compactly held together by being thickly pasted over with cobwebs. The eggs, two in number, of a dull grey-green, closely and in part confluently dashed with streaks of dusky-brown."

This species, according to Mr. Hodgson's notes and drawings, breeds in Nepal in the central districts of the hills from April to July, laying three or four eggs. The nest is a broad shallow saucer, some 4 inches in external diameter and 1·75 inch in height; it is placed in a fork where two or three slender branches divide, to one or more of which it is firmly bound with vegetable fibres and grass roots, and is composed of fine roots and vegetable fibres, and plastered over externally with pieces of lichen and moss. The eggs are regular ovals, with a pale-greenish ground blotched and spotted with a somewhat olivaceous brown.

The eggs of this species, sent me by Captain Hutton from Mussoorie, much resemble those of *Graucalus Macei* and *V. Sykesii*, but they are decidedly longer than the latter, and the general tone of their colouring is somewhat duller. In shape they are somewhat elongated ovals, more or less compressed towards one end; the general colour is greenish white, very thickly blotched and streaked with dull brown and very pale purple. The markings are very closely set, leaving but little of the ground-colour visible. They have little or no gloss.

They measure 1·03 by 0·72 inch, and 0·95 by 0·68 inch.

270.—*Graucalus Macei, Less.*

My friend Mr. F. R. Blewitt seems to be the only ornithologist who has taken many nests of the Large Grey Cuckoo-shrike. I never was so fortunate as to find one. He says :—

" This Shrike begins to pair about May, and in June the work of nidification commences. The place selected for the nest is the most lofty branch of a tree, and is built near the fork of two outlying twigs. If the bird has a preference it would appear to be for Mango and Mowa trees, on which I found most of the nests. The nest is in form circular, and its exterior is somewhat thickly made ; the interior is moderately cup-shaped. Thin twigs and grass-roots are freely used in its construction, while the outer part of the nest is somewhat thickly covered with what appears to be spider's web. Altogether the nest, considering the size of the birds, is of light structure. I am sorry I did not take the dimensions of each nest secured, but I sent you two very perfect ones. I found the first eggs in the beginning of July. They are of a dull lightish-green, with brown spots of sizes, more dense towards the large ends. The maximum number of eggs is three. The bird breeds from June to August."

The nests which Mr. Blewitt sent me remind one a good deal of those of the *Dicruri*. They are broad shallow saucers, with an egg cavity about 3 inches in diameter, and ¾ inch in depth, composed in the only two specimens that I possess of very fine twigs, chiefly those of the Furash (*Tamarix orientalis*). Exteriorly they are bound round with cobwebs, in which, a quantity of lichen is incorporated. The nests are loose flimsy fabrics, which but for the exterior coating of cobwebs, would certainly never have borne removal.

Dr. Jerdon remarks : " I once obtained its nest and eggs. The nest was built in a lofty *Casuarina* tree, close to my house at Tellicherry ; it was composed of small twigs and roots merely, of moderate size, and rather deeply cup-shaped, and contained three eggs, of a greenish fawn colour, with large blotches of purplish-brown."

The eggs are typically of a somewhat elongated oval, a good deal pointed towards one end, but some are broader and more of a typical Shrike shape. The eggs are of course considerably larger than those of either *C. excubitor*, *C. lahtora*, or *L. meridionalis*. The shell is compact and fine, and faintly glossy. The ground-colour is a palish-green stone color, greener in some, and somewhat more creamy in others. The markings are very Shrike-like, and consist of brown blotches, streaks, and spots, with numerous clouds and blotches of pale inky-purple, which appear to underlie the brown markings. The markings in some eggs are all very faint, and, as it were, half washed out, while in others they are very bright and clear. In some these are comparatively sparse and few ; in others close-set and numerous, especially in a broad zone near the large end ; but this zone is by no means invariably present ; in fact, not above one in five eggs exhibit it. There is something in these eggs which reminds one of some of the Terns' eggs ; and although, when compared with a large series of *C. lahtora*, individuals of this latter species may be found resembling them to a certain extent, I do not think that at first sight any zoologist would have felt sure that they *were* Shrike's eggs.

They vary in length from 1·15 to 1·3 inch, and in breadth from 0·85 to 0·95 inch, but the average of eight eggs is 1·22 by 0·9 inch nearly.

271.—*Pericrocotus speciosus, Lath.*

Captain Hutton tells me that the Large Minivet breeds both in the Doon, and in the hills overlooking it, to an elevation of about 5,000 feet. He says: "The nest is generally placed high up on the branch of some tall tree, often overhanging the side of a fearful precipice. On the 6th and 17th of June I procured two nests in ravines opening upon the Doon, one of which contained four, and the other five eggs of a dull-white colour, sparingly spotted and blotched with earthy-brown, more thickly so at the larger end, where they form an open ring of spots; other small blotches of a fainter colour are seen beneath the shell.

"It is a curious fact that in the latter nest, out of the five eggs, *three* were ringed at the larger end, and the other two *at the smaller end.* The nest is rather coarsely made, being very thick at the sides, and the materials not neatly interwoven; it is composed externally of dried grasses and the fine stalks of various small plants; interspersed with bits of cotton and grass-roots, and lined with the fine seed-stalks of small grasses."

I am not at all sure that there is not some mistake here. The nest described is rather that of *C. erythronotus* than of any of the *Pericrocoti,* and but for the excellent authority on which the above rests, I should certainly not have accepted it.

This species breeds in the forests of the central hills of Nepal; according to Mr. Hodgson's notes and drawings they begin laying about April, and lay three or four eggs which are neither described nor figured. The nest is a beautiful deep cup externally about 3·25 inches in diameter, and rather more than 2 inches high, composed of moss and moss-roots lined internally with the latter, and entirely coated exteriorly with lichen and a few stray pieces of green moss firmly secured in their places by spider's webs. The nest is placed in some slender branch between three or four upright sprays. This, I may note, is just the kind of nest one would have expected the Large Minivet to build.

The only specimens, supposed to be the eggs of this species, that I possess I owe to Captain Hutton. They closely resemble the eggs of *C. erythronotus,* but are perhaps shorter, and hence *look* broader than those of this latter. They are slightly bigger than the eggs of *C. vittatus.* In shape they seem to be typically a slighter broader oval than those of any of our true Shrikes, but elongated and pointed examples occur. Their ground-colour is a very pale greyish-white, thickly spotted all over the large end, and thickly dotted elsewhere with specks, spots, and tiny blotches of pale yellowish-brown and pale inky-purple. Compared with the eggs of the other *Pericrocoti,* they are very dingily coloured. The eggs are devoid of gloss. I am doubtful about these eggs.

In length they vary from 0·88 to 0·93 inch, and in breadth from 0·7 to 0·75 inch, but the average of five eggs is 0·9 by 0·72 inch.

272.—*Pericrocotus flammeus, Forst.*

The Orange Minivet lays, I believe, in June and July on the Nilghiris. I have never taken a nest myself, but I have received several, with a few words in regard to them, from Miss Cockburn.

The nests are comparatively massive little cups placed on, or sometimes in, the fork of slender boughs. They are usually composed of excessively fine twigs, the size of fir-needles, and they are densely plastered over the whole exterior surface with greenish-grey lichen, so closely and cleverly put together that the side of the nest looks exactly like a piece of a lichen-covered branch. There appears to be no lining, and the eggs are laid on the fine little twigs which compose the body of the nest.

The nests are externally from 3 to 3¼ inches in diameter, and about 1½ inch deep, with an egg cavity about 2 inches in diameter and about ¾ inch in depth. Some, however, when placed in a fork are much deeper and narrower, say externally 2½ inches in diameter, and the same height. The egg cavity about 1¾ inch in diameter and 1¼ inch in depth.

Miss Cockburn notes that one nest was found on the 24th June on a high tree, the nest being placed on a thin branch between 30 or 40 feet from the ground. It contained a single fresh egg, which was broken in the fall of the branch which had to be cut. This egg, the remains of which were sent me, had a pale-greenish ground, and was pretty thickly streaked and spotted, most thickly so at the large end, with pale yellowish-brown, and pale rather dingy-purple, the latter color predominating.

273.—*Pericrocotus brevirostris*, *Vig.*

The Short-billed Minivet breeds in the Himalayas at elevations of from 3,000 to 6,000 feet in Kumaon, and again in Kulu and the valley of the Sutlej. It lays in May and June, building a compact and delicate cup-shaped nest on a horizontal bough pretty high up in some Oak, Rhododendron, or other forest tree. I have never seen one on any kind of Fir.

Sometimes the nest is merely placed on, and attached firmly to, the upper surface of the branch, but, more commonly, the place where two smallish branches fork horizontally is chosen, and the nest is placed just at the fork. I got one nest at Kotgurh however, wedged in between two upright shoots from a horizontal Oak branch. The nests are composed of fine twigs, fir-needles, grass-roots, fine grass, slender dry stems of herbaceous plants, as the case may be, generally loosely, but occasionally compactly interlaced, intermingled and densely coated over the whole exterior with cobwebs and pieces of lichen, the latter so neatly put on that they appear to have grown where they are. Sometimes, especially at the base of the nest, a little moss is attached exteriorly, but, as a rule, there is nothing but lichen. The nest has no lining. The external diameter is about 2½ inches, and the usual height of the nest from 1½ to 2 inches, but this varies a good deal according to situation, and the bottom of the nest, which in some may be at most ¼ inch thick, in another is a full inch. The sides rarely exceed ¼ inch in thickness. The egg cavity has a diameter of about 2 inches, and a depth of from 1 to 1·25 inch.

Five seems to be the maximum number of eggs laid, but I have now twice met with three, more or less incubated, eggs.

Mr. Hodgson notes: "May 16th: At the top of the great forest of Sheopoori, secured a nest built near the top of a Kaiphul tree, and laid on a thick branch amongst smaller twigs. The nest is about 2 inches deep and the same in diameter: inside it is 1·5 inch deep; it is made of paper-like bits of lichen welded together with spider's webs, and with a lining of elastic fibres. It is the shape of a deep soap-stand, open at the top of course. It contained two eggs of a bluish or greenish white ground, much spotted with liver color, especially near the large end, where the spots are clustered into a zone."

The eggs of this species that I have seen are moderately broad ovals, as a rule, very regular in their shape, and scarcely compressed at all towards the lesser end. The shell is fine and satiny, but the eggs have little or no real gloss. The ground-colour is a dull-white, sometimes slightly tinged with pink, sometimes with green, and they are richly and profusely blotched, spotted, and streaked most densely, as a rule, towards the large end, with brownish red and pale purple. Most eggs exhibit a more or less conspicuous, though irregular, zone round the larger end.

The eggs vary in length from 0·71 to 0·75 inch, and in breadth from 0·53 to 0·56 inch.

275.—*Pericrocotus roseus, Vieill.*

The only one of my contributors who appears to have taken the eggs of the Rosy Minivet is Captain C. H. T. Marshall. Mr. R. Thompson says, "they breed in the warmer valleys of Kumaon, up to an elevation of some 5,000 feet, in May and June," but he adds: "I have never got down the nests."

Captain Marshall, writing from Murree, says: "The Rosy Minivet builds a beautifully little shallow cup-shaped nest, the outer edge being quite narrow and pointed. The external covering of the nest is fine pieces of lichen fastened on with cobwebs. It was found on the 12th of June, and contained three fresh eggs, white with greyish-brown spots and blotches sparsely scattered about the larger end; the length is 0·8 by 0·55 inch; 5,000 feet up."

The nest, which I owe to this gentleman, is externally a short section of a cylinder, rather than a cup, the walls standing up outside almost perpendicularly. It is 2·5 inches in diameter and nearly 1·75 in height. The rim of the nest is ¼ inch wide, and the cavity, a shallow *cup*, 2 inches wide by scarcely an inch deep; the walls of the nest increase in thickness as they approach the base. Externally the whole surface is *entirely* covered by small scales of lichen, firmly bound into their respective places by gossamer threads; internally the nest is a very loosely put together basket work of excessively fine twigs, and grass stems not thicker than common needles. A morsel or two of moss have become involved in the fabric, as well as two fine blades of grass, but there is no lining, and the eggs are obviously laid upon the soft loose basket frame of the nest.

The egg which accompanied the nest is a regular oval, slightly compressed towards one end. The ground-colour is pale greenish-white entirely devoid of gloss. The egg is richly blotched, spotted, and speckled (most densely so towards the larger end) with reddish-brown and greenish-purple, there being two conspicuously different shades (a much darker and a much lighter, the latter of which appears like subsurface tints) of each of these colours. This egg measures 0·82 by 0·6 inch nearly.

276.—*Pericrocotus peregrinus, Lin.*

Our Small Indian Minivet lays during the latter half of June (as soon in fact as the rains set in), and throughout July and August. I believe it breeds pretty well all over the country, and I have obtained nests and eggs from Sindh, Allygurh, Etawah, Jhansie, Saugor, Raepore, and Oudh.

The nest is small and neat, and done up generally like a Chaffinch's, to resemble the bark of the tree on which it is placed.

The nests, that I have seen, have been invariably placed at a considerable height from the ground in the fork of a branch, most commonly, I think, a Mango tree, though I have occasionally noticed them in other trees.

The nest is a small moderately deep cup with an internal cavity about 1·7 inch to 1·9 in diameter, and nearly an inch in depth. The sides of the nest are about ⅜ inch thick, and the thickness of the bottom of the nest varies according to the shape of the fork chosen, whether obtuse or acute-angled. In the former case the bottom of the nest is sometimes not above ¼ inch in depth. In the latter case, it is sometimes as much as an inch in thickness. It is composed of very fine, needle-like, twigs (with at times here and there a few feathers) carefully bound together externally with cobwebs, and coated with small pieces of bark or dead leaves, or both, so that looked at from below with the naked eye, it is impossible to distinguish it from one of the many little excrescences so common, especially on Mango trees. There appears to be rarely any regular lining, a very little down, and cobwebs form the only bed for the eggs, and even this is often wanting. Sometimes a few tiny dead leaves or a little lichen will be found incorporated in the nest, and occasionally, but rarely, fine grass stems take the place of very slender twigs.

Three is, I believe, the normal number of the eggs. I extract a couple of old notes I made in regard to the nests of this species: "*August* 5*th.*—Took three eggs of this bird, shooting the two old birds at the same time. The tree was a Mango, the nest was in the fork of a branch, some 40 feet from the ground, built interiorly with very small twigs, with here and there a very few feathers intermixed, and was exteriorly coated with fine flakes of bark held in their place by gossamer threads. It was cup-shaped, with an interior diameter of 1⅞ by ¾ inch.

"The eggs had a slightly greenish white ground, thickly spotted and speckled, and towards the larger end blotched, with somewhat brownish red; the markings showing a decided tendency to form a zone round, or cap at, the larger end."

"*Allygurh, August* 27*th.*—Another beautiful little nest in a Mango tree high up, a tiny cup about 1½ inch internal diameter by ¾ inch deep, woven with very fine twigs, and exteriorly coated with tiny fragments of bark and dead leaves firmly secured in their places with gossamer threads and cobwebs. It contained two fresh eggs; a pale slightly greenish-white ground, richly speckled and spotted with, and a few small blotches of, a purplish and a brownish-red. The markings greatly predominating towards the larger end."

Mr. F. R. Blewitt, detailing his experiences in Jhansie and Saugor, says: "Breeds in June and July. The Tamarind tree is by preference chosen by this bird for its nest; at least the three I saw were all on Tamarind trees. The nest, cup-shaped, is a compactly made structure; the exterior appeared to be composed of the very fine petioles of leaves, with a thick coating all over of what looked like spider's web; attached to this web-like substance here and there, for better disguise, were the dry leaves of the Tamarind tree; the lining of very fine grass. The outer diameter of a nest may fairly be given at 2·2 inches, inner at 1·8, depth of nest 0·9. Two is the regular number of eggs, at least that was the number in the three nests I took. In colour they are of a pale greenish-white, sparingly speckled on the narrower half of the egg with brownish spots, but have on the broader half the spots more dense, and forming at the end a more or less complete cap. The feat of securing a nest is a most hazardous one, for it is always fixed close in between two delicate forks at the extreme end of a slight side-branch near to the top of the tree. On each occasion that the nest was detected the male bird was found flitting about near to it, the female all the while sitting on the eggs. On the last two occasions of finding the nests, it was this flitting to and fro of the male that attracted us, otherwise the nest is so small that from the ground the eye can scarcely distinguish it from the branch. The bird appears to be migratory, for since the termination of the breeding season it has disappeared from these parts."

The eggs are of a rather broad oval shape, and, as is often the case even in the typical Shrikes, very blunt at both ends. The ground-colour is a pale delicate greenish-white, and they are more or less richly marked with bright, slightly brownish-red specks, spots, and blotches, which, always more numerous at the large end, have a tendency there to form a mottled irregular cap. In many eggs, besides these primary markings, a number of small faint patches and blotches of pale inky-purple are observable, almost exclusively at the large end. The eggs appear to be quite devoid of gloss. I have eggs both of *Copsychus saularis* and *Thamnobia cambaiensis*, strange as it may seem, closely resembling, except in size, some types of this bird's egg; and I have one egg of *Merula simillima* from the Nilghiris, which, though immensely larger, so far as tint, colour and character of ground and markings go, is positively identical with eggs that I have of this species.

In length the eggs vary from 0·6 to 0·7 inch, and in breadth from 0·5 to 0·56 inch, but the average of 28 eggs is 0·67 nearly by 0·53 inch.

278.—*Buchanga albirictus, Hodgs.*

The Common King-crow lays throughout India, at any rate in the plain country; it does not breed either in the Himalayas or the Nilghiris at any height, certainly not, I think, at any elevation exceeding 2,000 feet.

A few eggs may be found towards the close of April, and again during the first week of August, but May, June, and July are *the* months.

It builds usually pretty high up in tall trees, in some fork not quite at the outside, constructing a broad shallow cup, and lays normally four eggs, although I *have* found five. Elsewhere I have recorded the following in regard to its nidification :—

" Close at our own gate is a pretty Neem tree, the '*Melia azadirachta*,' a species now naturalized in Provence and other parts of south of France. High up in a fork a small nest was visible, and projecting over it on one side a black forked tail that could belong to nothing but the King-crow, of which the local representative here (at Bareilly) is *B. albirictus*. Of this bird we have already taken during the last six weeks at least 50 nests, and in many cases where we had left the empty nest in *statu quo*, we found it a week later with a fresh batch of eggs laid therein. Many birds will never return to a nest which has once been robbed, but others, like the King-crow and the little Shrike (*L. vittatus*), will continue laying even after the nest has been *twice* robbed. The very day after the nest has been cleared of perhaps four slightly incubated eggs, a fresh one that otherwise would assuredly never have seen the light is laid, and that, too, a fertile egg, which, if not meddled with, will be hatched off in due course. It might be supposed that immediately on discovering their loss, nature urged the birds to new intercourse, the result of which was the fertile egg, and this, in some cases, is probably really the case; Martins and others of the Swallow kind being often to be seen busy with 'love's pleasing labour' before their eggs have been well stowed away by the collectors. But this will not account for instances that I have observed of birds in confinement, who separated from the male before they had laid their full number, and then later just when they began to sit deprived of their eggs, straightway laid a second set neither so large nor so well coloured as the first, but still fertile eggs that were duly hatched. But for the removal of the first set, these subsequent eggs would never have been developed or laid. Now, the theory has always been that the contact of the sperm and germ cells causes the development and fertilization of the latter. In these cases no fresh accession of sperm cells was possible, and hence it would seem as if in some birds the female organs were able to store up living sperm cells, which only work to fertilize and develope ova, in the event of some accident rendering it necessary, and which otherwise ultimately loose vitality and pass away without action.

"The nest of the King-crow that we took was of the ordinary type; in fact I have noticed scarcely any difference in the shape or materials of all the numerous nests of this common bird that I have yet seen. They are all composed of tiny twigs and fine grass stems, and the roots of the khus-khus grass, as a rule, neatly and tightly woven together, and exteriorly bound round with a good deal of cobweb, in which a few feathers are sometimes entangled. The cavity is broad and shallow, and at times lined with horse-hair or fine grass, but most commonly only with khus. The bottom of the nest is very thin, but the sides or rim, rather firm, and thick; in this case the cavity was 4 inches in diameter and about 1½ in depth, and contained three pure white glossless eggs. In the very next tree, however, (a Mango, and this is perhaps their favourite tree) was another similar nest, containing four eggs, slightly glossy, with a salmon pink tinge throughout, and numerous well marked brownish red specks and spots, most numerous towards the largeend, looking vastly like Brobdignagian specimens of the Rocket bird's eggs. The variation in this bird's eggs is remarkable; out of more than one hundred eggs nearly one-third have been pure white, and between the dead glossless purely white egg and a somewhat glossy, warm pinky grounded one, with numerous well-marked spots and specks of maroon colour, dull-red and red-brown, or even dusky, every possible gradation is found. Each set of eggs, however, seems to be invariably of the same type, and we have never yet found a quite white, and a well coloured and marked egg in the same nest.

"These birds are very jealous of the approach of other birds even of their own species to a nest in which they have eggs, and many a little family would this year have been safely reared. and their ovate cradles have escaped the plundering hands of my shikaries, had not attention been invariably called to the whereabouts of the nest by the pertinacious and vicious rushes of one or other of the parents from near their nest at every feathered thing that passed them by."

Captain Hutton says: "This species, which appears to be generally diffused throughout India, is not uncommon in the Dehra Doon, but does not ascend the hills; it breeds in June, laying four eggs of somewhat variable size. They are pure white, thus differing widely from those of the supposed *D. longicaudatus* of Mussoorie.

"It is evident likewise that the eggs which Captain Tickell assigns to this species do not belong to it. (*Vide* Journal, As. Soc., vol. 17, p. 304).

"The nest differs from that of our hill species, being larger and far less neatly made; it is placed in the bifurcation of the smaller branches of a tall tree, and is composed exteriorly of the hard semi-woody stalks of various plants, plastered over with cobwebs. Another one was constructed entirely of fine roots like the *khus-khus* used for tatties, and plastered over like the former with cobwebs. It is flattened, or saucer-shaped, and about 5 inches in diameter."

Mr. F. R. Blewitt remarks: "It breeds from the middle of May well into August. I do not think it has two broods in the year, at least close observation has not proved the fact. Trees of sizes are chosen indiscriminately for the nest, from the lofty Mango and Tamarind to the low-growing 'Roonj,' &c.

"The nest is a peculiarly slight-formed structure (occasionally I have seen it otherwise, but this is the exception,) always neatly made. The exterior of the nest is composed of small fine twigs, roots, and grass, with generally a good deal of spider's web round the outer surface. The average exterior diameter of the nest is about 5·5 inches. The cavity is frequently lined with horse-hair. On three or four occasions I have seen very fine khus substituted for the hair. The average inner diameter of the nest is about 3·4 inches.

"The regular number of eggs is four; in colour they are a light reddish-white, with a few spots or blotches, here and there, of purplish-red or red-brown. The eggs often differ much in size.

"I happened to find in one nest two eggs, one of the usual size, the other only about one-third of the size. What is more surprising, it was perfectly formed, as regards the white and yolk. The instance of sagacity related by Mr. Phillips and quoted by Jerdon was related to him by the late Mr. Davis, my old Collector of Customs.

"I have on two or three occasions myself witnessed similar instances of sagacity. This bird, during the breeding season, is pugnacious to a degree, fearlessly attacking every bird that approaches the tree on which the nest may be."

Writing from the Sambhur Lake, Mr. R. M. Adam says:—

"Very common here. The King-crow breeds here in June and July. The eggs vary much with regard to colouring; some are pure white without spots, some have dark brown spots on the white ground, whilst others have a pale rufous ground darker at the broader end, with spots of deep rust colour and lilac."

There are two very distinct types of this bird's eggs. The one pure white and spotless, the other a pale salmon colour, spotted with a rich brownish red. These eggs unquestionably both belong to the same species, as I have taken them times without number myself and can positively certify to their parentage; moreover, connecting links are not wanting in a large series. I have one egg perfectly white, with the exception of three or four blackish brown spots, another with more of these spots, another with almost as many as the ordinary spotted eggs have, the ground-colour in all these being still pure white, and the spots being blackish or very deep reddish-brown. Then I have others similar to these just described, but showing a faint salmon-coloured halo round one or two of the largest spots, others in which the halo is further developed, and others again, with the entire ground colour, an excessively pale salmon throughout, and so on a complete series gradually increasing in intensity of colour till we get the pure rich salmon buff which is at the other end of the scale. I am particular in this description, because the eggs of this bird have been a subject of almost as many contradictions between Indian Naturalists as the chamelion of pious memory. In shape the eggs are typically a rather long oval, somewhat pointed towards one end. Very much elongated varieties are common, recalling in this respect the eggs of *Chibia hottentotta*. Spherical varieties, if they occur, must be very rare; the enormous series I possess containing no example. In the colour of the ground, as above remarked, there is every possible variety of shade between pure white and a very rich salmon colour. In the intensity and number of the markings there is an equally great variety. The markings, always spots and specks, the largest never exceeding 0·1 inch in diameter, are invariably most numerous towards the large end, where they are sometimes, though rarely, slightly confluent. They vary from only two or three, to a number too large to count, and in colour through many shades of reddish, blackish, and purplish-brown, the latter being rare and abnormal.

The eggs are entirely devoid of gloss, as a rule, though here and there a slight trace of it is observable. It is this want of gloss alone that distinguishes some of the larger white, black-spotted varieties from the eggs of the common Oriole, which they occasionally exactly resemble not only in shape, colour, and character of marking, but even (though generally smaller) in size.

In length they vary from 0·95 to 1·15 inch, and in breadth from 0·7 to 0·85 inch; but the average of 150 eggs measured is 1·01 by 0·75 inch. I have two dwarf eggs of this species not included in the above average which I myself obtained in different nests, measuring only 0·78 by 0·5 inch and 0·87 by 0·62 inch.

280.—*Buchanga longicaudatus*, *Hay.*

The Long-tailed Drongo, a species that, with the really large series before me from all parts of India, I find it impossible to sub-divide into *himalayanus*, Tytler (= *Waldeni*, Beavan, nec Poll.), *Hodgsoni*, Walden, &c., breeds alike in the plains in well-watered and wooded districts and in the Himalayas up to an elevation of 6,000 to 7,000 feet, and lays during the months of May and June.

They build generally in large trees, at a considerable height from the ground, placing their somewhat shallow cup-shaped nests in some slender fork towards the summit or exterior of the tree.

The nest is neatly and firmly built, of fine grass stems, slender twigs, and grass-roots, closely interwoven, and externally bound together with cobwebs, in which, as in the body of the nest, lichens of several species are much intermingled. Exteriorly the nests are from 4 to 5 inches in diameter, and from 2 to 2½ in height. Interiorly they are lined with moss, roots, hairs, and fine grass; the cavity measuring from 3 to 3·5 inches in breadth, and from 1·1 to 1·4 inch in depth. The normal number of the eggs is four.

Mr. Brooks says: "The nest is usually fixed on the upper surface of a thin branch about 15 to 20 feet from the ground, and at its junction with another branch, the nest being partly embedded in the fork of two *horizontal* branches. It is composed of grass, fibres, and roots, and lined with finer grasses and a few hairs. The nest is broader and much shallower than that of *D. albirictus*; outside it is covered with spiders' webs and small bits of lichen.

"The eggs are four in number, sometimes only three, and vary much in size, shape, and color; size 1·0 by 0·7 inch; some are buff, blotched with light reddish-brown and pale purple-grey; others are lighter buff, almost white in fact, spotted and marked more sparingly than the first described with the same two colors, but each of a darker tint; others are white, marked sparingly with spots and blotches of dark purple-brown and reddish-brown, and intermixed with larger blotches of deep purple-grey, the markings principally forming a zone at the larger end. Others, again, are pale purplish-white, spotted with dark and light purple-brown, and intermixed with spots and blotches of purple-grey. The shape of the egg varies as much as the coloring, some being of a fine oval form, while others are quite pyriform.

"Laying in Kumaon from the middle to end of May." As I shall notice further on, I think that Mr. Brooks is mistaken about some of his eggs.

Captain Hutton remarks: "This species, the only one that visits Mussoorie, arrives from the Doon about the middle of March, and retires again about September. It is abundant during the summer months, and breeds from the latter end of April till the middle of June, making a very neat nest, which is placed in the bifurcation of a horizontal branch of some tall tree, usually an Oak tree; it is constructed of grey lichens gathered from the trees, and fine seed-stalks of grasses, firmly and neatly interwoven; with the latter it is also usually lined, although sometimes a black fibrous lichen is used; externally the materials are kept compactly together, by being plastered over with spiders' webs. It is altogether a light and elegant nest. The shape is circular, somewhat shallow; internal diameter 3 inches. The eggs are three to four, generally the latter number, and so variable in colour and distribution of spots that until I had got several specimens and compared them narrowly, I was inclined to think we had more than one species of *Dicrurus* here. I am, however, now fully convinced that these variable eggs belong to the same species. Sometimes they are dull white with brick-red spots openly disposed in form of a rude ring at the larger end; at other times the spots are rufescent claret, with duller indistinct ones appearing through the shell; others are of a deep carneous hue, clouded, and coarsely blotched with deep rufescent claret; while again some are faint carneous with large irregular blotches of rufous clay with duller ones beneath the shell."

Some of Captain Hutton's eggs which he sent me were clearly those of *Hypsipetes psaroides* (of which also he sent me specimens) and the fact is that in thick foliage where the Red-bill is not seen nothing is easier than to mistake this bird for *B. longicaudatus*. I have taken a great many of these nests, and I never found eggs other than of the two types to be below described.

Mr. Gammie found a nest at Mongpho near Darjeeling at an elevation of about 3,500 feet on the 13th May. It was placed on an outer branch of a tall tree and contained only one partially incubated egg. The nest was a beautifully compact, but shallow, cup, placed on the upper surface of the bough, composed externally of roots and coated with a little lichen and a great deal of cobweb. Interiorly lined with the finest grass and moss-roots. The cavity measured about 3 inches in diameter and scarcely more than 1 inch in depth. At the bottom, where it rested on the bough, the nest was not above $\frac{1}{4}$ inch thick, and consisted only of the lining materials. Laterally it was about $\frac{3}{4}$ inch thick.

The egg was a broad oval, slightly compressed towards one and, but not at all pointed. The shell very fine and with a slight gloss, the ground colour a delicate salmon pink and with a broad ring of deep brownish-pink spots and blotches intermingled with pale purple subsurface-looking clouds and spots round the large end. The rest of the egg with some half dozen similar spots.

Captain C. H. T. Marshall, writing from Murree, says: "Breeds in May, in almost inaccessible places, about 7,000 feet up, choosing a thin fork at the outermost end of a bough about 50 or 60 feet from the ground, and always on trees that have no lower branches. The nest is almost invisible from below, as it is very neatly built on the top of the fork; and when the female sits on it, she places her tail down the bough so as entirely to hide herself. The eggs are only to be obtained either by climbing higher up the tree than the nest is, and extracting the eggs by means of a small muslin bag at the end of a long stick, or else by lashing the bough on which the nest is to an upper bough as the climber goes along so as to make it strong enough to support him. The nest is much neater than that of *D. macrocercus*; the eggs are light salmon coloured, with brick-red blotches sparsely scattered over them, and are ·95 by ·7 inch."

Long ago Captain Cock, writing from Dhurumsala, said: "I took a nest on the 8th of May, containing four eggs. The eggs are regular, roundish ovals, somewhat pointed towards one end. The ground colour is white, here and there suffused with a faint pinkish tinge, and it is spotted and blotched with purplish-red and pale-lilac, most of the spots being gathered into an irregular zone about the large end."

Dr. Jerdon says: "I found its nest on one occasion, in April, in Lower Malabar. It was shallow and loosely made with roots, and lined with hair, above 20 feet from the ground, on the fork of a tree; and it contained three eggs of a pinkish white color, with some longish rusty, or brick-red spots."

There are two very strongly marked types of this bird's eggs. The eggs of both types are moderately broad, or, at most, somewhat elongated ovals, and comparatively devoid of gloss. The first, in its colouring, exactly resembles the eggs of *Caprimulgus indicus*; a pinkish salmon-coloured ground, streaked, blotched, and clouded, but nowhere densely (except towards the large end, where there is a tendency to form a cap or zone), with reddish-pink, not differing widely in hue from, though deeper in shade than, the ground-colour. Here and there, where the markings are thickest, under-clouds of very faint purple occur, but these are too feeble to attract attention, unless the egg is looked into closely. In the other type of egg, the ground colour is pale, pinkish white, pretty boldly blotched and spotted almost exclusively towards the large end, where there is a broad irregular imperfect zone, with brownish red, intermingled with blotches of very faint inky purple. My description possibly fails to make this as apparent as it should be, but no two eggs can, to a casual observer, appear more distinct than these two types. There is yet, according to Mr. Brooks, a third type of this bird's eggs; of this he has given me a single example. In shape it is excessively long and narrow, of the type of the eggs of *Chibia hottentotta*, but its colouration and character of markings are unlike those of any Shrike or Drongo with which I am acquainted, and exactly resemble those of many types of the eggs of the several Bulbuls. The ground colour is pinkish white, and is thickly speckled and spotted throughout with primary markings of rich brownish red, and feeble secondary ones of excessively pale inky purple. This egg, moreover, possesses a degree of gloss never observable in those of the *Dicruri*, and therefore, well assured though Mr. Brooks is of the parentage of this egg which he took with his own hands, I feel confident, having since obtained many eggs of *Hypsipetes psaroides* which are exactly similar to this last described egg, that in, perhaps, indifferent light he mistook this bird for a *Dicrurus*. I may add that the first described type, of which I have procured numerous specimens from different parts of the Himalayas, taking *several* nests with my own hands, is most characteristic of this species.

The eggs vary in length from 0·85 to 1·01 inch, and in breadth from 0·7 to 0·75 inch, but the average of thirty eggs is 0·94 by 0·72 inch.

281.—*Dicrurus cæruleus, Müll.*

I have never seen a nest of the White-bellied King-crow. Mr. R. Thompson says: "This bird's breeding habitat is from 2,500 to 6,000 feet in the Himalayas.

It is common on the south-eastern slopes of Nyneetal. It lays in May and June, placing its shallow cup-shaped nest in some little fork, near the top of a moderate-sized Oak tree, if breeding on a mountain side, but of some tall *Alnus nipalensis*, *Acacia elata*, or *Acer oblongum*, if nesting in deep dells or valleys. The nest appeared to be exactly like that of *D. albirictus*, but I can say nothing very positive about it or the eggs, as though continually seing them, I never, I think, took the trouble of getting one down."

281 bis.—*Buchanga leucopygialis, Blyth.*

Mr. W. V. Legge writing from Ceylon furnishes me with the following particulars in regard to the nidification of the White-vented King-crow. "This Drongo Shrike, which inhabits principally the western, southern, and lower parts of the Central Provinces, breeds, as far as the south is concerned at the latter end of the north-east monsoon, which is the nesting season with us for most insessorial birds. I have obtained the eggs from the middle of March to the first week in April. The nest is generally placed in a horizontal fork of an upper branch of some good-sized tree; in the cultivated districts the Jack tree is often chosen, as it is one which the bird frequents as much, if not more than others, sitting on its outspreading branches during the heat of the day and sallying forth from it in quest of insects. It is situated sometimes as high as 40 feet from the ground, and is a rather flat cup-shaped structure made of grass stalks and bark fibres with the usual spider's webs on the exterior to bind the materials together; it is lined with finer materials of the same sort, the interior measuring about 2½ inches in diameter by about 1¼ inch in depth. The eggs are nearly always three in number, sometimes two, and vary somewhat in size, some being roundish, and others long oval in form. The dimensions of three eggs, one, of one clutch, and two of another are:—

No. 1. *a.* axis 0·97 inches; diameter 0·67.
,, 2. { *b.* axis 0·86 ,, ,, 0·67.
{ *c.* axis 0·8 ,, ,, 0·66.

The ground color is fleshy, or almost pure, white, clouded lightly about the obtuse end with bluish grey or pale lilac and blotched over this with longitudinal patches of pale red and reddish grey, thickest, and sometimes confluent, round the large end, and small and sparingly distributed round the smaller.

The young appear to be fledged in about three weeks from the time of hatching and are vigorously defended against intruders by their parents. I have had the old birds fly close to my head while climbing up to a nest."

282.—*Chaptia ænea, Vieill.*

The Bronzed Drongo breeds according to Mr. Hodgson's notes in the central hills of Nepal, or rather in the plains near to these hills, rarely quitting large woods. They begin to lay in March and build a broad, somewhat saucer-shaped nest, some 4 or 5 inches in width, and 2 to 3 in depth externally; the nest is placed in some slender horizontal fork, to one at least of the twigs of which it is firmly attached by vegetable fibres. It is composed of fine twigs and grass, and bound round with cobwebs in which pieces of lichen and small cocoons are often intermingled. Mr. Hodgson specially notes: "June 6th, valley. Female, nest and eggs. Nest on fork of upper branch of large tree; 4·5 inches wide by 2·25 deep; cup-shaped, made of fibres of grass, bound with cob-webs, lining none; three eggs, obtusely oval, the ground fawn tinged white, blotched especially at larger end with fawn or reddish-brown."

It appears that four is the maximum number of eggs laid; both sexes participate in the work of incubation and rearing the young, but they are very jealous of the approach of any birds when they have eggs or young, driving all such intruders away with the utmost bravery. The eggs measure from 0·88 to 0·95 inch by 0·65.

283.—*Bhringa tectirostris, Hodgs.*

Of the Indian Oar-blade Drongo Mr. R. Thompson says: "This elegant Drongo is somewhat common in our lower Kumaon ranges. Its lively clear and ringing notes are one of the greatest charms of the spring season in our forests. It breeds in May and June, and builds upon lofty trees in dense forests, usually in some deep damp valley. The nest from below looks just like that of a common King-crow—a broad shallow cup; but I never closely examined either nest or eggs."

Dr. Jerdon remarks: "A nest with eggs were brought to me in June, said to be of this species. The nest was loosely made of sticks and roots, and contained three eggs, reddish white, with a very few reddish brown blotches."

284.—*Dissemurus malabaröides, Hodgs.*

Of the Northern Racket-tailed Drongo Dr. Jerdon tells us that he has "had its nest brought him several times at Darjeeling; rather a large structure of twigs and roots, and the eggs, usually three in number, pinkish white, with claret-coloured or purple spots, but they vary a great deal in size, form, and colouring. They breed in April and May."

The solitary egg that I possess of this species given me by Dr. Jerdon is probably an exceptionally small one. It is a broad oval, tapering a good deal towards one end, a good deal less than the eggs of *Chibia hottentotta,* and not very much larger than some eggs of *B. albirictus.* Its colouration, however, resembles that of *Chibia hottentotta,* and differs conspicuously, *when compared with them* (though it may be difficult to make this apparent by description) from those of the true *Dicruri.* The ground-colour is a dead white, and it is very thinly speckled all over, a little more thickly towards the large end, with minute dots and spots, chiefly of a very pale inky purple; a very few only of the spots being a dark inky-purple. The texture of the egg is fine and close, but it is devoid of gloss. This egg only measures 1·1 by 0·87 inch. Dr. Jerdon vouched for its authenticity, or I should not have accepted it; as it is I accept it only as a very abnormal specimen.

286.—*Chibia hottentotta, Lin.*

Mr. R. Thompson says: "The Hair-crested Drongo is extremely common as a breeder in all our hot valleys (Kumaon and Gurhwal). It lays in May and June, building in forks of branches of small leafy trees situated in warm valleys, having an elevation of from 2,000 to 2,500 feet. The nest is circular, about 5 inches in diameter, rather deep and hollow. It is composed of fine roots and fibres bound together with cobwebs, and it is lined with hairs and fine roots. They lay from three to four, much elongated, purplish-white eggs, spotted with pink or claret colour."

Dr. Jerdon remarks: "The Lepchas at Darjeeling brought me the nest, which was said to have been placed high up in a large tree. It was composed of twigs and roots and a few bits of grass, and contained two eggs, livid white, with purplish and claret spots, and of a very elongated form."

The Jobraj, according to Mr. Hodgson's notes and figures, begins to lay in Nepal in April. It builds a large shallow nest, 8 or 9 inches in diameter externally, with the cavity of about half that diameter, attached, as a rule, to the slender branches of some horizontal fork, between which it is suspended much like that of an oriole, though much shallower than this latter. It is composed of small twigs, fine roots, and grass stems bound together, and to the branches to which it is attached with vegetable fibre, and more or less coated with cobwebs; little pieces of lichen and moss are also blended in the nest. It lays three or four eggs, rather pyriform in shape, measuring 1·25 by 0·86 inch, with a whitish or pinky-whitish ground speckled and spotted pretty well all over, but most densely towards the large end, with reddish pink.

The two eggs my museum contains of this species are long pointed ovals, longer and more pointed than those of any other species of this family with which I am acquainted, reminding one forcibly, so far as shape goes, of those of the Lesser Cormorant *(G. melanognathus)*. In colour and markings they resemble the egg I have of *Dissemurus malabaroides*. I am indebted for the specimens I possess to Dr. Jerdon, who took them, he told *me*, with his own hands at Darjeeling. The ground colour is a dull dead white, thinly speckled all over (somewhat more thickly at the large end) with tiny spots and blotches mostly of a very faint inky-purple hue, but here and there of a dull purplish-black. As is the case generally in this family, the eggs are entirely devoid of gloss. The eggs measure 1·25 by 0·82 inch, and 1·35 by 0·85 inch. I suspect that this and other eggs given me by Dr. Jerdon have faded sadly since they were taken.

287.—*Artamus fuscus, Vieill.*

Mr. R. Thompson says: "I have frequently found the nests of the Ashy Swallow Shrike, and have watched the old birds constructing them, but never took down their eggs. Two or three pairs may always be found nesting on the Long-leaved Pine, as one comes up from Kaladoongee to Nyneetal and passes half way up from the first dâk chokee at Ghutgurh. They lay in May and June, constructing their nest on the horizontal extension of a main branch of some lofty tree, generally *Pinus longifolia.* The nest, composed of fine grasses, roots and fibres, is a loose only slightly cup-shaped structure, some 5 inches in diameter."

Dr. Jerdon says on the other hand:—

"I have procured the nest of this bird situated on a Palmyra tree on the stem of the leaf. It was a deep cup-shaped nest, made of grass, leaves, and numerous feathers, and contained two eggs, white with a greenish tinge, and with light brown spots, chiefly at the larger end. I see that Mr. Layard procured the nest in Ceylon, where this bird is common, in the heads of cocoanut trees, made of fibres and grasses, and it was probably the nest of this bird that was brought to Tickell as that of the Palm-swift."

According to Mr. Hodgson this species begins to lay in March, the young being fledged in June; the nest is a broad shallow saucer, from 6 to 8 inches in diameter, composed of grass and roots, together with a little lichen, loosely put together, a green leaf or two being sometimes found as a lining to the nest. The nest is placed on some broad horizontal branch, where two or three slender twigs or shoots grow out of it, or on the top of some stump of a tree, or broken end of a branch, generally, at a considerable height from the ground. The eggs are *figured* as white, spotted and blotched almost exclusively at the large end with yellowish brown, and measuring 0·8 by 0·52 inch but no actual measurements are recorded.

Mr. Gammie, however, himself found, and kindly sent me, a nest and eggs of this species, at Mongpho near Darjeeling at an elevation of about 3,500 feet on the 13th May 1873. It was placed in the hole of a trunk of a dead tree at a height of about 40 feet from the ground, and it contained three hard-set eggs. The nest was a loose shallow saucer of coarse roots devoid of lining. The eggs were rather narrow ovals, a good deal pointed towards one end; the shell fine and with a slight gloss. The ground colour was creamy-white, and the markings, which are almost entirely confined to a broad ring round the large end and the space within it, consisted of spots and clouds of very pale yellowish brown, intermingled with clouds and specks of excessively pale, nearly washed out, lilac.

The eggs varied from 0·92 to 0·97 inch in length, and from 0·7 to 0·72 inch in breadth.

287 bis.—*Artamus leucorhynchos, Gmel.*

A bird, which we at present identify with this species, the Pale-billed Swallow-shrike, breeds, we know, in the Andamans and Great Cocos, and that is nearly all we do know. Mr. Davison says: "On the 2nd of May I saw a bird of this species fly into a hollow at the top of a rotten Mangrove stump about 20 feet high. The next day I went, but did not like to climb the stump, as it appeared unsafe, so I determined to cut it down, and after giving about six strokes that made the stump shake from end to end, the bird flew out. I made sure that as the bird sat so close, the nest must contain eggs, so I ceased cutting and managed to get a very light native, who volunteered to climb it;

but on his reaching the top, he found, to my astonishment, that the nest, although apparently finished, was empty. The nest was built entirely of grass, somewhat coarse on the exterior, finer on the inside; it was a shallow saucer-shaped structure, and was placed in a hollow at the top of the stump."

288.—*Tchitrea paradisi, Lin.*

The Rocket-bird, or Paradise Fly-catcher, breeds throughout the exterior ranges of the Himalayas in the warmer valleys up to an elevation of 5,500; at any rate from Nepal to Afghanistan. Even at considerable distances in the interior, as about Almorah, Kotegurh, and the Sutlege Valley, Sooltanpoor, and the valley of the Beas, and Cashmere, it is common. Mr. Blyth, in the Ibis for 1870, says that he has only seen *T. affinis* from the Himalayas, but as a matter of fact *affinis never* occurs in the Himalayas, west of the Ganges, and is very rare even in Kumaon. Throughout the warm Sub-Himalayan forest tracts, in the Doon, the Terai, and the northern portions of Rohilcund and Oudh, and in wooded portions of Jhansee, Saugor, Nimar, Raepoor, and doubtless other portions of the Central Provinces, it breeds, though more sparingly, in these latter. It must breed in Southern India, but I have no information as to its nidification there, and neither Miss Cockburn, Mr. Davison, nor any other of my Nilghiri correspondents appear to have taken its nest there.

Alike in plains and hills it lays during May, June, and July. The nest is commonly a delicate little cup, never very deep, often rather shallow, composed, according to locality, of moss, moss-roots, vegetable fibres, and fine grass, which latter generally constitutes the greater portion of the frame-work, bound round exteriorly with cob-webs in which little white silky cocoons are often intermixed. Sometimes, owing to the situation in which it is placed between two or three upright twigs, the nest is exteriorly a broad inverted cone. I have one taken in the Agrore Valley by Captain Unwin that is exteriorly 4 inches deep and 3 inches in diameter at the upper rim, but, as a rule, the exterior depth does not exceed 2 inches, and the cavity varies in diameter from 2 to 2·75, and in depth from 1 to 1·6. There is, not uncommonly, a good deal of horse-hair woven in the interior surface of the cavity, and this, with the finer grass which is used in this part of the nest, forms a sort of lining. The walls of the nest are scarcely above ¼ inch in thickness, and where the nest rests, as it often does, on the flat surface of some broad horizontal bough, just where some twig (which is then firmly incorporated in the nest) rises perpendicularly or nearly so from that surface, the bottom of the nest is hardly thicker, but at times, when fitted in between two or three such twigs, it is as much as 2 or 2½ inches in thickness. The nests in fact exhibit the forms of those of both *Leucocerca aureola*, and *albicollis* and though larger, and perhaps, as a rule, somewhat less densely coated with cobwebs, closely resemble these, as they do also, in a somewhat less degree, those of *Iora zeylonica* and *Tephrodornis ponticeriana*.

The full number of eggs laid is four.

As to the plumage in which these birds breed, Mr. Gould says (Birds of Asia):—

"I believe that when the long feathers have been once acquired by either sex, they are not again thrown off, and that they are not a seasonal or breeding characteristic, as some authors have supposed: the short-tailed birds, which are always chestnut, are very young birds."

This, according to my experience, is certainly wrong. I have taken from first to last some thirty nests, and in every case found the sitting female to be a short-tailed cinnamon-colored bird, and in *almost* every case I found the male to be a long-tailed cinnamon-colored bird. In a very few cases the males were white, and in a few party-colored.

Writing some years ago from Bareilly in June, I said :—

"In the public gardens is a large circular reservoir, dry and empty during the hot season, but now half full of water; on the banks on one side are a number of Sheeshum trees *(Dalbergia sissoo)*, and on one of the outermost branches of these, at the very end, where the branch hangs nearly straight downwards, and where only one independent twig dissenting from its principal persists in growing straight upwards, there, between branch and twig, was placed a half egg-shaped nest, a mere shell, very closely and compactly woven of fine grass-roots and grass, thickly coated exteriorly with cobwebs, in amongst which a great number of small white empty cocoons had been interwoven. The nest was nowhere much above ¼ inch in thickness, and the cavity was about 2½ inches in diameter at the margin and 1½ inch deep. A nest we took the other day was seated on a horizontal branch of a Mango tree, had horse-hair and a little fine tow interwoven with the grass interiorly, and was a trifle smaller; exteriorly the two were precisely similar.

"On this nest, its head tucked close in, with only the beak projecting in front, but with the whole tail from the vent showing beyond the nest behind, sat a chestnut female, whose centre tail feathers were not in the slightest degree elongated. The nest contained three fresh eggs, precisely similar to the four which we took two days ago. They were white, with a very pale salmon-colored tinge, with numerous dull red specks and spots, nearly all gathered into a large patch at the broad end, where they were partly confluent, and their interspaces filled up by a haze of a paler shade of the same colour, as if the colouring of the spots had partially run."

Captain Hutton remarks: "Several nests of this beautiful species were taken during the month of June in the Dehra Doon. They are generally perched high upon some tree that overhangs the side of a ravine and are consequently somewhat difficult of access. The bird is likewise to be found during the summer months in some of the warmer valleys of the hills, and breeds up to an elevation of 5,500 feet on the outer hills.

"The eggs are four in number and white, sparingly dotted over with brick-red spots, with an open ring of the same at the large end. The nest is small, beautifully and compactly constructed of very fine blades of grass, and a little green moss neatly interwoven into the shape of a small cup, and well plastered over externally with cobwebs; the lining is of very fine grass stalks, sometimes with the addition of a little horse-hair. It is usually placed at the point where three or four twigs spring from the branch, and these are completely incorporated into the sides of the nest, the materials of which entirely envelope them, so that they appear protruding from, or through, the sides of the light and graceful fabric. They differ somewhat in point of size, some being rather larger and more open than others."

Mr. Brooks writes "Common in the villages about Almorah, seldom coming up to the elevation of the town itself. I have two males shot off the nest in the chestnut plumage. The nest is a neat cup-shaped one, fixed to a thin branch of a tree by means of fine grass and spiders' webs. It is composed of moss, fibres and grass, and covered thickly outside with spider's web. The internal diameter of the nest is about 2 inches, and it is lined with fine grass. The bottom of the nest now described rests on a small twig growing out of the thin branch to which the nest is bound. Number of eggs three; 9½ lines long by 7½ lines broad, of a buffy white ground color, or more properly buff sparingly spotted with reddish-brown and purplish-grey, tending to form a zone at the larger end in nearly every instance.

"It lays in Kumaon in the third week in May."

From Murree Captain Marshall reports: "We took ten nests in May, June, and July. The female was in *all* instances *chestnut*, with a white breast and short tail. This is one of the commonest nests to be got about Murree. Average elevation 5,000 feet."

Dr. Henderson says: "The Paradise Fly-catcher was very abundant in Kashmir. Two nests were found, both on the forks of trees,—one on an apple tree, the other on a mulberry tree, and high up in small branches. There was a single egg in one nest, and in the other four. The nests were made of very fine hair-like strips of mulberry bark, with grass, moss, and cobwebs outside."

The eggs are miniatures of the warmer colored types of *Buchanga albirictus*; in shape they are, like these, typically a rather long oval somewhat pointed towards one end. The ground colour varies from pale pinkish-white to a warm salmon-pink, and they are more or less thickly speckled, chiefly at the large end (where there is a tendency to form an irregular cap,) with rather bright, but somewhat brownish-red spots. Amongst the markings at the larger end a few tiny, pale inky-purple blotches often occur. There is often a faint gloss on some of the eggs, but, as a rule, they are dull and glossless like the rest of eggs of this family. I have seen eggs of the European Spotted Fly-catcher not differing very widely from these except in shape, the eggs of the European bird being typically shorter, if not broader.

In length the eggs vary from 0·75 to 0·85 inch and in breadth from 0·56 to 0·65 inch but the average of twenty eggs is 0·81 by 0·6 inch.

290.—*Myiagra azurea*, *Bodd.*

The Black-naped Azure Fly-catcher breeds in the low, warm, well-wooded valleys of the Sub-Himalayan Ranges to a height of about 3,000 feet; in the forest tracts at their bases; in the forests of the Central Provinces; in the Nilghiris to an elevation of 2,000 or 3,000 feet, and doubtless in many other well-wooded localities. They lay from May to August, but the majority of them, I believe, in June and the early part of July. Five is, I believe, the maximum number of eggs, and four the normal number.

The nests are usually placed in slender forks of the exterior branches of trees, at no great height from the ground, or attached to some pendent bamboo spray. They are deep, compact, little cups, more massive than those of the *Leucocerca's*, though much of the same general type. The diameter of the cavity is from 1·5 to 1·75 inch the depth from 1 to nearly 1¼, and the sides and bottom of the nest may be about ⅝ inch thick. The nest is composed internally of fine grass stems, well woven together; externally of rather coarser grass and vegetable fibres; the whole partially coated with cobwebs, by which numerous small white cocoons and commonly some tiny pieces of dry leaves and lichen are attached to the nest. In Southern Indian nests from the Nilghiris (found on the 10th and 24th June, placed as usual in forks of their branches and twigs at heights of from 7 to 8 feet from the ground) a good deal of green moss is intermingled with the cocoons in the exterior coating. The nests, too, are somewhat larger, I think, than our northern ones, having internal cavities of fully 2 inches in diameter and 1¼ inch in depth.

Mr. Davison says: "I found a nest of this bird on the 28th August 1871 between Goodalore and the Ouchterlony Valley. It was an exceedingly neat cup-shaped nest fastened to one of the sprays of a bamboo that overhung the road; it contained three very young birds."

Dr. Jerdon informs us that "Mr. Ward procured the nest at Honore in a bamboo clump, made with bamboo leaves and fibres, and containing two eggs, white, with a few large blotches of purplish red."

There must be some mistake here, as this will not answer either to the nest or eggs of our bird.

Mr. Swinhoe says that in Formosa "it nidificates much in the manner of the common Fly-catcher (*Muscicapa grisola*) at home, building a deep purse-like nest of spider's web and catkins in the forks of tree-branches, usually preferring a branch that leans against a tree or wall. The eggs, numbering from four to five, and rarely to seven, are, when fresh, pinky-white, spotted, specially at the larger end, with deep madder pink and light pinkish-grey. They vary somewhat in size, the largest egg measuring ·6 by ·48 inch."

The Formosan bird must, I think, though doubtless very closely allied, be distinct; the eggs are much too small, as will be seen from the dimensions given below for those of our Indian bird.

The eggs of this latter species, which I have myself taken and which I owe to Miss Cockburn of Kotagherry, Mr. F. R. Blewitt, and others, are of much the same type as those of so many of this family. In shape they are moderately broad and very regular ovals, occasionally slightly compressed towards the smaller end; the shell is very fine and smooth, but they have little or no gloss; the ground colour varies from almost pure white to a pale salmon-pink; the markings consist of specks or spots of red or reddish-pink, varying much in intensity, amongst which a few small pale purple spots are in some eggs intermingled. As a rule, the markings are chiefly about the larger end of the egg, to which, in some, they are exclusively confined, and where they often form a more or less strongly marked, and more or less confluent zone, or cap, as the case may be. In some the markings are small spots, in others the minutest specks imaginable, and where the markings are pretty dense, as they are in some eggs about the large end, they are commonly more or less enveloped in a reddish halo. The eggs, as will be readily understood from this description, vary very considerably in appearance, some inclining more to the type of *Tchitrea paradisi*, others to those of *Eumyias melanops*, but the character of all is the same.

In length they vary from 0·66 to 0·71 inch, and in width from 0·5 to 0·55 inch, but the average of seventeen eggs is a little less than 0·69 inch by a little less than 0·53 inch.

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290 *bis.—Myiagra Tytleri, Beavan.*

A nest of Tytler's Azure Fly-catcher was found at Aberdeen, S. Andaman, on the 23rd April 1873; it was fastened to the branch of a small tree that overhung the path. In shape it is an inverted cone, 3 inches in depth exteriorly and 2½ inches in diameter; the egg cavity, which is nearly hemispherical, is 2 inches in diameter and 1·1 in depth. The nest is very compactly woven of soft vegetable fibre, with which also it is firmly bound against the slender stem to which it is attached. Towards the exterior of the nest, a good deal of green moss, a number of satiny white cocoons, and a little bright ferruginous fern root has been incorporated in the nest, and the whole carefully coated, though not thickly so, with gossamer threads and spiders' webs, and the cavity of the nest neatly lined with black hair-like moss roots.

The eggs were three in number, very similar to those of *M. azurea,* but perhaps more strongly marked; in shape they are regular broad ovals; the shell is smooth and fine, and has a faint gloss; the ground colour varies from pinky to creamy white, and towards the large end there is a broad irregular zone of red or brownish-red specks or spots, in one egg very minute and closely set, in another larger and less numerous, surrounded more or less with a pinkish halo; here and there a few tiny spots or clouds of lilac may be detected amongst the other markings of the zone; outside the zone tiny specks, few and far between, diversify the rest of the surface of the egg.

In length the eggs measured 0·67 and 0·68 inch, and in breadth 0·52 and 0·53 inch.

291.—*Leucocirca fuscoventris, Frankl.*

The White-throated Fantail breeds in the wooded Sub-Himalayan tracts and all the warmer valleys of the outer Himalayan ranges (up to an elevation of 4,000 or 5,000 feet,) from Debrooghur to Murree, in Eastern and Lower Bengal, and in the forest districts of Central India, in Raipoor and the Tributary Mehals, and doubtless, though I have no precise information on the subject, in suitable localities throughout Southern India.

It lays in May, June, and the early part of July. The nests of this species are typically solid, and compactly built, inverted cones, placed usually in some slender upright fork, which is completely imbedded in the structure of the lower part of the nest; the nests are externally from 3·5 to 4 inches in depth, and from 2·5 to 2·75 in their greatest diameter; they are not, as a rule, true cones, as they generally continue for some distance nearly of the same size, and are then contracted rather rapidly; the rim of the nest is often a good deal higher on one side than on the other; the egg cavity is about 1·75 inch in diameter, and is from 0·75 to 1·5 inch in depth; the nest is composed of grass stems, and pieces of dry blades of grass, with here and there pieces of woody and other vegetable fibre, and entirely coated with cobwebs; there is a pretence for lining the cavity with a few fine grass roots. Occasionally, but rarely, the nests are simply more or less shallow cups, exactly resembling those of *L. albofrontata.* The eggs are three in number.

Blyth, in Jardine's contributions to Ornithology, writes: "The nest of *L. fuscoventris* is affixed, sometimes to a small stem of bamboo as represented by our figure in the background, and sometimes placed as represented in our principal figure. It is constructed of, and lined with, fine grass stems, bound round on the outside with some flat leaves of grass, which are more or less completely covered over with spider's web; and there is always a quantity of material hanging from the bottom, so as to produce the appearance of a funnel. The peculiarity is much more strongly marked in Mr. Gould's figure of the nest of *Rhipidura albiscapa*; but he says of that species that it has invariably but two eggs, whereas the nest of *L. fuscoventris* here figured contained three. These much resemble the eggs of *Sylvia curruca* (*Curruca garrula*, Brisson), being of a sullied white with few scattered spots, except those forming a broad zone towards the large end, and the colour of which are greenish olive-brown, mingled with some dark ashy spots."

Captain Hutton remarks: "These curious little Fan-tailed Fly-catchers are only seen upon the hills at about 5,500 feet in the warmth of summer, and occasionally they breed at that elevation. More generally, however, they are confined to the Dehra Doon, where they frequent the Mango trees, darting out occasionally with a tumbling flight as if falling from the tree, and suddenly returning to their perch. It keeps up an almost incessant sharp snapping sound with the beak as it hawks about the tree for insects, and indulges occasionally in a, not unpleasing, little song.

"Its nest was taken on the 25th of May from a lofty tree and contained three small eggs of a faint carneous white with a ring of earthy brown spots at the larger end, and a few of a fainter hue scattered over the shell. Diameter $\frac{11}{16}$ by $\frac{7}{16}$.

"The nest is a very neat and beautifully constructed littlec up, being a perfect miniature of that of *Tchitrea paradisi*, and composed entirely of very fine grassy fibres compactly held together by a complete and thick coating of cobwebs smoothly plastered all over it. It was placed upon a single twig which ran obliquely from beneath it up one side and formed its sole support. Internal diameter about 1¾ inch; over all 2 inches."

Writing from Murree, Captain C. H. T. Marshall says: "The nest of this species differs from that of *L. aureola*, being the shape of an inverted cone, beautifully made, lined with the finest grass, and covered with cobwebs; it was situated in a clump of thin branches. Eggs like those of *L. aureola*, only smaller and rounder. These nests are found in the lower ranges, at about 5,000 feet up."

Writing from the Kumaon Bhabur, Mr. R. Thompson says: "Many nests of this bird I have found, but not in similar localities to those of *L. albofrontata*. The present species prefers deep dense woods, keeping well within a thickly wooded forest country, whereas the other prefers more open and cultivated tracts."

The eggs of this species are slightly smaller than, but in other respects precisely similar to, those of *L. albofrontata*. In shape the eggs are a somewhat elongated oval, a good deal compressed towards one end. They are wanting in gloss, and have a very pale fawn colour or yellowish or greyish white ground, with, usually near the large end, a conspicuous irregular zone of grey specks and spots, a few yellowish or greyish brown specks being sprinkled over the rest of the egg.

In length the eggs vary from 0·6 to 0·66 inch, and in breadth from 0·48 to 0·52 inch, but the average is 0·65 by 0·49 inch.

292.—*Leucocirca albofrontata, Frankl.*

The White-browed Fantail breeds all over the plains of Continental India, and in the lower ranges of the Himalayas up to an elevation of at least 4,000 feet.

It certainly breeds twice in the year, and if not disturbed rears a second brood in the same nest. Eggs *may* be found, for I have myself found them, from the latter end of February to the early part of August, but the two chief periods are March and July.

The nests, fully described below, are generally seated on the broad surface of some horizontal bough, or else placed *on* some horizontal slender fork.

The following are some of the many notes I have from time to time recorded about the nidification of this species.

"*Etawah, 29th of March* 1867.—Took a nest of this Fantail. It was placed, as they almost always here are, on a Mango tree, resting on the upper surface of a nearly horizontal branch. It was a deep hemispherical cup with an internal diameter of about 1·75 inch and a depth of about 1·12. It had for internal framework a sort of basket of very fine grass stems and was externally everywhere thickly coated with cobwebs; the total thickness of the sides nowhere exceeded $\frac{1}{4}$ inch, but at the bottom, owing to the irregularity of shape of the bough on which it was built, it was in places as much 0·5 inch thick. It contained three, very similar, slightly incubated eggs. In shape short ovals. The ground white, with many excessively minute yellowish brown specks, and near the middle towards the large end a pretty broad nearly confluent zone of these specks and faint greyish brown, or perhaps very pale inky ones of a rather larger size. The white ground in the neighbourhood of this zone is feebly and partially tinged with buffy."

"*April 11th.*—Saw a nest of this just ready to lay in. It never appears to lay more than three eggs."

"*July 22nd, Agra.*—Nest and one egg. The nest was built on the junction of a stout three-pronged branch on which it was firmly seated, having the cobwebs with which, as usual, it was coated entwined round each of the branches successively. It was found in a Mango tree. The interior of the nest was lined with several pieces of flowering grass. The nest was 2 inches in diameter, 1·37 inch in depth exteriorly, and 1 inch interiorly."

"*August 1st.*—A beautiful little nest containing three hard-set eggs. The nest was of the usual type, round, cup-shaped, wound round entirely with cobwebs and fastened to a branch of a Mango tree. It was lined with fine grass roots and a little horse hair."

"*July 15th.*—Adam found a nest of this species at Muttra in a shrub of *Cerbera thevetia*; it contained three fresh eggs. We have a large series of these now and altogether they show a sort of family likeness to the eggs of many of the true Shrikes, and specially to those of the pretty little *Lanius vittatus.*"

Writing from Bareilly, I said: "The crow whose eggs we had just taken kept flying about uneasily from tree to tree, when suddenly out darted at it a little bird about one-twentieth of its weight; white below, smoke-coloured above, with a conspicuous white eyebrow plainly visible as it darted after the dusky giant, whose approach it evidently so strongly disapproved. The flight, and the long fan-shaped out-spread tail, left no doubt that it was *L. albofrontata,* one of the Fan-tailed Fly-catchers. The nest was seated on a horizontal branch of a Mango tree, a very delicate small tumbler-like affair; scarcely $\frac{1}{4}$ inch in thickness anywhere, closely woven of very fine grass and coated over its whole exterior with cobwebs. The interior diameter was about 1·75 inch, the depth about 1·12 inch. Although the little bird returned and sat across it, its beak and half the head projecting in front, and the whole tail from the vent overhanging behind the nest, the latter contained no eggs."

Mr. F. R. Blewitt, writing of his experiences in Jhansie and Saugor, says: "Breeds in July and August. I obtained four nests, all on Neem trees and firmly attached to the upper surface of a branch where it divided into two slender stems making a fork, *on* which, in each case, it was placed. The nest is very neatly made; on the exterior composed entirely of vegetable fibre, with a pretty thick coating of some spider-web-like substance, over the vegetable fibre. It is cup-shaped, the lining of it consisting of very fine grass. The outer diameter fairly averages 2·4 inches, inner cavity 2 inches, depth 1 inch.

"The eggs are of a light creamy white, lightly spotted with minute light brown spots from near the middle to the small end; the broad part is closely spotted and blotched, forming a kind of belt. The upper end is very slightly dotted also with the brownish spots."

Mr. R. M. Adam remarks: "In North Behar I found this bird building on the 21st April. In Oudh I took two nests in May, one contained three, the other two eggs. About Agra I have taken nests in June and July."

Captain Hutton tells us that "a beautiful small nest of this bird was taken in the Doon on the 22nd of May; it contained three small eggs of a creamy white, longitudinally dashed with dusky brown or pale sepia. The nest was a very elegant little oval cup, composed of an open basket-work of very fine stalks of plants, and thickly plastered over externally with cotton and the seed-down of plants so as to render the whole compact and strong.

"It ascends as high as 5,000 feet in the summer months."

From Murree Captain C. H. T. Marshall records that: "The nest of this fantail is very neatly made, shallow cup-shaped, carefully covered outside with cobwebs. It is built on a thin branch about 10 feet up a tree. The eggs much resemble diminutive Shrike's eggs. Breeds in June."

Dr. Jerdon says: "I have had the nest brought me, very neatly made with fine roots, lined with hair, deeply cup-shaped, and fixed in the fork of a bamboo. The eggs were white, with some rather large reddish brown spots."

There is here some mistake; this will not answer at all to the nest and eggs of our bird. Clearly it is the same nest that Ward erroneously took for that *M. azurea* as already noticed. I cannot imagine what the bird is to which these nests belonged, and I wish some of my Southern Indian contributors would try and solve the difficulty.

The eggs are typically moderately broad ovals, a good deal compressed towards one end, and almost invariably exhibit the typical Shrike-like zone. The ground-color varies from pure white to very pale yellowish brown or dingy cream color, and the markings are, as a rule, almost confined to a broad irregular zone, near the large end, of greyish brown specks and spots of greater or less intensity of color, often more or less confluent or connected together by a dull haze of the same shade, and at times intermingled with spots or tiny clouds of very faint inky purple. The upper end of the egg inside of the zone is commonly thinly speckled with spots similar to those composing it. The lower portion of the egg below the zone is as often as not spotless; in other cases it is very thinly speckled like the space inside the zone. In some eggs the markings are absolutely confined to the zone. The eggs are not unlike those of *Myialestes cinereocapilla*, which, however, are smaller; but they are always more feebly marked than these. In length they vary from 0·6 to 0·76 inch, and in breadth from 0·48 to 0·55 inch; but the average of thirty eggs measured is 0·66 by 0·51 inch.

293.—*Leucocerca pectoralis, Jerd.*

As far as I know, the White-spotted Fantail only breeds on the Nilghiris, Pulneys, Anmallies, and the loftier of the Western Ghauts, up to Mount Aboo, where I found it not uncommon. I myself have never taken the eggs or nests of this species, but Miss Cockburn of Kotagherry has furnished me with the following interesting account of it and of its nidification :—

"Though not very common on these hills, they are to be found in pairs in certain localities, and their pleasing little song (consisting of several notes which follow each other in a regularly descending scale, like the words 'If it's a pity, to say it ; why do you do it ?') is frequently repeated.

"These Fantails are most restless and active, constantly flitting from one spray to another, and snapping up small insects while on the wing. When seated on a branch, their tails are raised and spread to the full extent, while their wings are lowered and head slightly thrown back. Sometimes they alight on the ground, where it is amusing to watch their activity, which is evinced in a kind of dance (with expanded tails), varied by a snap (like the noise of castanets) aimed at some unfortunate little insect, whose winged progress has suddenly been stopped by the keen-eyed Fantail.

"A pair of these birds are constantly in our garden, and do not show the least degree of shyness or fear, often allowing me to stand and watch them quite close. They build an extremely pretty nest, very much resembling a wine-glass in shape, which, however, appears to be unfinished, and is left with straws hanging down in a careless manner. The upper portion of the nest is entirely composed of very fine straws, with a thin addition of spiders' webs outside, to keep the whole structure firm and also to strengthen its hold on the slender branch to which it is attached. I have sat for hours watching their untiring industry, and been much amused to see the manner in which the latter part of the building was conducted. One of the birds would fly to the nest with a spider's web in its bill, and after fixing one end, the little creature, taking hold of the other, would seat itself in the nest and give a sudden twist round and round until it had drawn the material sufficiently tight, when it would fasten it securely, thus giving a neatly finished appearance to the outside. They build on low twigs of large trees, and always lay three eggs of a brownish-white color, which have a very distinct circle of dark spots and streaks round the thick end. This however is the case, more or less, with all the Fly-catchers' eggs with which I am acquainted. These birds have built on the Peach trees in our garden, and although we were most careful that no one should touch their nests, Squirrels, Crows, and Crow Pheasants used to deprive them of their young. On these occasions the distress of the parents was sad to witness, but it seemed to last for only a few hours ; before the day was ended their sweet song was resumed, and in less than a week another nest would be commenced.

"A pair of these Fantail Fly-catchers once had their nest of young ones on an Orange tree, and when my cat went too near it (as they thought), they attacked her in such a manner, fluttering and chattering close to her ears, as to oblige her to take refuge under a wheelbarrow. These birds build in April and the three following months."

294.—*Chelidorhynx hypoxantha, Blyth.*

I know nothing of the breeding of the Yellow-bellied Fantail.

Dr. Jerdon tells us that at Darjeeling he had the nest brought him, but after the young had flown. "It is an exceedingly neat, deep, cup-shaped nest, made of moss, lichen, hairs and wool, well carded into a compact structure."

Mr. Hodgson figures the nest of this species as a very beautiful, deep, and compact cup, placed on a horizontal fork of a thin branch, composed interiorly of grass roots closely interwoven, and exteriorly thickly coated with moss and lichens. The egg in the drawing in my possession (which is the original) is represented as nearly white without spots. In the finished copy in the British Museum Mr. Blyth says that the egg is shown as "white faintly speckled."

Mr. R. Thompson, writing from the Kumaon Bhabur, says that this "species breeds in May and June, and builds its cup-shaped, deeply hollow nest on the horizontal branch of a tree, either in a grove, coppice, or damp valley, the bird preferring thick woods to live in. The nest is composed of fine hairs, moss, roots, and plenty of cobwebs, all nicely felted together, forming a neat compact little nest about 2 inches in diameter. I never took down the eggs."

295.—*Myialestes cinereocapilla, Vieill.*

The Grey-headed Fly-catcher breeds everywhere in the outer ranges of the Himalayas from 4,000 to 7,000 feet, in the Wynaad at an elevation of some 3,500, and throughout the Nilghiris from an elevation of from 4,500 quite to the summits wherever there is any jungle or forest. It lays during the latter half of April, May, and June; four being, I think, the normal number of the eggs, but three being often the full complement.

The nests, very fully described by my different correspondents, are constructed amidst the growing moss on some perpendicular rock or old trunk of a tree. One now before me found near Kotagherry on the 20th May 1871, on a rock near water, about 6 feet above the ground, is a deep massive little cup of moss felted together, a little white and green lichen being intermingled with the moss; externally it is about 2¼ inches in diameter and more than 3 inches in height. The cavity is not lined in any way, and is a little more than 1 inch in diameter, and perhaps 2 inches in depth. When *in situ*, this nest was of course covered externally with a great deal of loose moss, which was blended with that growing on the rock. Usually they may be briefly described as quarters of spheres placed against upright surfaces, with rather deeper than hemispherical cavities, composed entirely of moss and lichen.

Mr J. L. Darling, Junior, writes: "This species breeds from April to May; it is found all over the Nilghiris above 4,500 feet, and down in the Wynaad from (say) 3,500 feet. It attaches its nest with cobwebs to the faces of tree-trunks and rocks at heights of from 7 to 30 feet above the ground. The nest is composed of moss and cobwebs, and has no lining. The outline of the upper surface is nearly semi-circular, say about 5 or 6 inches in length, where it joins the rock and projecting some 4 inches. The cavity which is in the middle of this is quite circular and deeper than it is wide. The profile of the nest is a quarter of a circle, and externally it is from 4 to 6 inches deep. They lay from three to four eggs; more generally I think the former number."

Mr. Davison remarks: "This bird breeds commonly on the Nilghiris in April and May, choosing as a site for the nest some moss-covered trunk of a tree or rock, against which the nest is placed; it is composed entirely of green moss, lined with moss-roots; it is so constructed that it appears like an ordinary lump of moss. The egg cavity is very deep, the bird when sitting being invisible at a distance of only a few paces. The eggs are three in number;

sometimes, though very seldom, four; white, ringed at the larger end with indistinct spots of a blackish grey, and with a few spots of the same colour sparingly scattered over the entire surface of the egg."

Writing from Kotagherry, Miss Cockburn tells us that "these Fly-catchers generally choose the perpendicular sides of rocks on which there is a quantity of green moss as places to build on, and form their pretty little abodes (which in shape somewhat resemble that of a swallow) of moss and cobweb, which makes them difficult to distinguish and impossible to remove uninjured. They build in the month of April and lay four eggs of a light grey, which have the dark streaks and blotches, mostly at the *thick* end, so peculiar to all Fly-catchers' eggs."

Captain Hutton remarks: "I took a nest of this species on 18th April 1848, in a deep and thickly wooded glen at an elevation of 4,500 feet. It was placed against the moss-covered trunk of a large tree, growing by the side of a mountain stream, and was neatly and beautifully constructed of green moss, fixed in the shape of a watch-pocket at the head of a bed to the mosses of the tree (with which it was completely blended) by numerous threads of spiders' webs. The lining was of the finest grass stalks, no thicker than horse-hair, and beneath the body of the nest depended a long bunch of mosses, fastened to the tree with spiders' webs, and serving as a support or cushion on which the nest rested securely. Within this beautifully constructed fabric were four small eggs of a dull white colour, with a faint olive tinge, and minutely spotted with pale greenish brown, and having a broad and well defined ring of the same, near the larger end. The eggs were set hard."

Writing from Murree, Captain C. H. T. Marshall says: "Several nests answering to Jerdon's (*i. e., Hutton's*) description, like watch-pockets fastened up on the trees, 6,000 to 7,000 feet up."

The eggs are moderately broad ovals, scarcely compressed towards the smaller end. The ground colour is a dingy yellowish white, and they have a broad conspicuous confluent zone of spots and blotches towards the large end, the colour of which is a mottled combination of dingy yellowish brown and dingy purplish grey. The rest of the egg is more or less thickly spotted or freckled with very pale dingy brown. The eggs are almost glossless.

In length they vary from 0·58 to 0·65 of an inch, and in breadth from 0·46 to 0·5 of an inch, but the average of a large series is 0·62 nearly, by 0·48, nearly.

296.—*Hemichelidon sibiricus, Gmel.*

Captain Cock found a nest of the Sooty Fly-catcher, on the 5th June, with three eggs at Sonamurgs, up the Scind River (Cashmere). It was placed against the side of a tree trunk; the eggs are long ovals, a good deal pointed and compressed towards the lesser end. The ground colour is a very pale dull green, and it is very faintly mottled, most densely towards the large end, with *very* pale reddish brown. The coloration of the egg is somewhat like that of a very feebly-coloured *Pratincola indica.* The eggs measured 0·65 by 0·46inch.

Mr. Hodgson figures the nest, placed on the stump end of a broad broken branch—a very massive rather shallow pad, with a cup-shaped cavity composed of moss and lichens and lined with black moss roots. The egg is figured as above described. The nest is about 4 inches across and less than 2 high, and the cavity is a little less than 1·75 inch in diameter.

299.—*Hemichelidon ferrugineus, Hodgs.*

All I know of the nidification of the Ferruginous Fly-catcher is, that Mr. Hodgson figures the nest as a beautiful compact circular pad of moss and lichens, 5 inches in diameter and 2 in height, with a small central circular cavity, placed upon the surface of an old stump of a tree. The egg he figures as a sort of buff colour, *café au lait,* minutely and feebly freckled with brownish red, and measuring 0·69 by 0·5 inch.

300.—*Ochromela nigrorufa, Jerd.*

So far as we yet certainly know, the Orange-and-black Fly-catcher only breeds on the Nilghiris, at elevations of from 5,000 to 7,000 feet. It lays from March to May, two being the normal number of the eggs, but three being occasionally found. A nest of this species, taken by Mr. Carter at Coonoor, in the Nilghiris, is a very remarkable structure for a bird of this species. It is a huge coarse ball-like nest, made of dry sedge flags, and very coarse marsh grass, on a foundation of dead leaves. It is almost incredible at first sight that this nest should really belong to this bird, but this is the normal type of nest, of which I have now seen many. The nest itself has an external diameter of at least 6 inches, and the egg cavity, which is near the centre of the nest, and which is devoid of lining, is about 2½ inches in diameter, and fully 2¼ inches deep. Other nests taken by Miss Cockburn and Mr. Davison are precisely similar in character,—regular balls of dry sedge and coarse grass, wedged in usually to the centre of a bush, with a small entrance hole at one side near the top and entirely devoid of lining, usually with more or less dry leaves as a foundation to the ball.

Mr. J. L. Darling, Junior, says: "I have taken the eggs in March, April and May in 1870-71-72, at Ooty, Coonoor, and Kotagherry, at elevations of from 5,000 to 7,000 feet. The nest is placed in thick clumps. The bird is fond of building in the cluster of new shoots that rise from the stump of a tree that has been felled. Usually, the nests are at heights of from 1 to 3 feet from the ground; but I have found one placed actually on the ground. The nest is globular, higher than it is wide, with a small entrance hole at one side, *below* which the nest is a little drawn in and *above* which the dome projects somewhat. The foundation of the nest is almost always composed of dry leaves and fern, and the rest of it is woven of reed leaves and flags. There is no lining; the eggs rest upon the soft reed leaves. The nest exteriorly is about 6 or 7 inches high and 4 broad, and the diameter of the central spherical cavity is perhaps 3 inches. The eggs are always two in number, a dirty-white, somewhat brownish ground, shaded more with reddish brown towards and at the large end."

Mr. Davison says: "The nest of this bird is quite unlike that of any of the Fly-catchers with which I am acquainted; it is (for the size of the bird) a *large* globular structure, composed chiefly of the dry leaves of a kind of reed common on the Nilghiris and its slopes; the opening is near the top, and the egg cavity is very deep; the eggs, two or three in number, of the true Fly-catcher type, being of a pale brownish salmon colour, indistinctly mottled with a darker colour, the markings coalescing to form a zone or cap at the larger end. Usually, it lays only two eggs, but I have taken three. It is a permanent resident from 5,000 feet to the summit of the Nilghiris, and when found at a lower elevation than 5,000 feet, I believe it is only as a straggler. It breeds from April to the early part of June. The nest is usually placed close to the ground in a clump of ferns or reeds, or some similar situation."

Miss Cockburn remarks : "The Orange Fly-catcher had chosen a clump of reeds, in which they had built their nest (rather a large one for so small a bird). The shoots of the reeds were growing all round. It was commenced with large pieces of dry common fern leaves and continued with a quantity of dry grass, some of which was brought so as to form a hood over the small round opening left at one side. The interior was lined with very fine grass, but contained nothing soft or warm. This nest was found on the 11th of May, and another found on the last day of the same month ; was built with exactly the same materials."

The first egg of this species which I obtained I owed to Messrs. H. Carter and Wait, who sent it from Conoor (Nilghiris). It is a long oval egg, an exact miniature of some eggs of *Myiophoneus Temminckii*, but also having obvious affinities with the *Eumyias* and *Niltava* group. The shell is very fine and delicate, with a very faint gloss. The ground is a pale greyish white, thickly and very finely speckled and mottled all over with very faint brownish red, which speckling becomes confluent towards the larger end, forming a dull, irregular, pale brownish-red cap. Other specimens, received from Miss Cockburn and Mr. Davison, are similar in colour to that already described, but are somewhat broader and less elongated ovals in shape. In some eggs the markings are almost exclusively confined to the larger end, where they form a confluent pale, apparently half-washed out, brownish pink cap.

The eggs vary in length from 0·65 to 0·75 inch, and in breadth from 0·46 to 0·58 inch, but the average is 0·7 by 0·53 inch.

301.—*Stoporala melanops, Vig.*

The Verditer Fly-catcher breeds throughout the outer ranges of the Himalayas, at elevations of from 4,500 to 9,000 feet, from Assam to Afghanistan. They lay from April till the middle of July.

The nest of this species that I have seen in the neighbourhood of Simla were soft masses of moss, lined with very fine moss-roots, or composed almost entirely of these latter, measuring 4 or 5 inches in diameter externally and with a central depression, about 2 to 3 inches in diameter and about 1 to 1½ inch in depth, in which the eggs were placed. The nests rather convey the idea of a mass of materials having been heaped together, and the birds having formed the egg cavity by pressure on the centre of the mass, than of having been regularly built in the usual acceptation of the word. Nests, found on the 19th April and the 25th May near Rungbee (Darjeeling), at a height of about 5,000 feet, the one in a crevice of a rock, the other in the wall of a shed, were precisely as above described, but at times they are more regularly cup-shaped. As to the localities in which the nest is placed, the following notes sufficiently explain this ; but I would mention that I have once seen one as figured by Mr. Hodgson, resting on the fork of a branch. Four is certainly the normal number of the eggs.

From Murree Captain C. H. T. Marshall writes:—"The Verditer Fly-catcher always builds under the small wooden bridges that cross the hill-paths. We found more than half a dozen nests all situated under these bridges. The eggs are pale pink and sometimes have a few fine speckles on them. Breeds in June, at an elevation from 4,000 to 7,000 feet."

From Dhurmsala Captain Cock sent me the following note:—" Nidificates in April and May in the North-West Himalayas. Nest is composed of green moss externally, lined with black fibres, cup-shaped and deep, diameter of the inside of the cup from 2¼ inches to 2½. Nest is usually placed by the side of a road or nullah under some very overhanging bank, often under some low bridge of the hill roads on one of the rough supports. On two occasions I found the nests in decayed trees, but never at a height of more than 5 feet from the ground. Parent bird sits very close and may sometimes be caught on the nest. Lays four eggs; when fresh, of a pinky white, with minute faint brick-red marks, having a tendency to form a zone round larger end. After they have been blown, the egg becomes a very faint buff colour with the aforesaid marks."

At Mussoorie Captain Hutton records that this "is a common species throughout the mountains up to about 12,000 feet during summer, arriving about the beginning of March. It breeds in May and June, making a neat nest of green moss in holes of trees, in stumps, and in the holes of banks by the road-side. The eggs are three or four in number, dull-white, with faint rufous specks at the larger end, and somewhat inclined to form a ring."

From Almora we hear from Mr. Brooks that "the nest is usually placed in a hole in a steep bank-side, at a tree root, or hole in the wall of some unfrequented building, under the rafters of the verandah of a dwelling-house, and under the eaves of a house-roof. Once I found one in a small niche inside a small building, or cover built over a well or spring; the size of the little building, which had a domed roof, being about 6 feet square. The floor was *water*, about 3 feet deep, and directly opposite the door was the small niche in the wall, about 8 inches wide, and here the bird sat on its nest in full view of every native who came to draw water. The nest is composed of moss and fine fibres and lined with hair; eggs four, colour, fleshy-white, clouded, and finely mottled with pale reddish brown at the large end. The egg much resembles some light-coloured varieties of that of the English Robin. Laying in Kumaon from 11th May to middle of June."

"At Nynee Tal," says Mr. R. Thompson, "it lays in April, May and June.

"It builds on the ground, in holes in banks, corners and holes in rocks, but most frequently under a bridge, in the timbers of which, if it finds a hole, there it will most assuredly make its nest. This latter is circular, cup-shaped, and composed of coarse grass, roots, moss, hair and fibres. It averages some 4 inches in diameter. The eggs are usually four in number. It breeds at all elevations from 3,500 feet and upwards. I have most frequently found the nest placed under a bridge of the common sort made over small streams in our hills. One bred under a bridge near my house in several successive years, and always had four eggs in the nest."

Dr. Jerdon states that "it breeds at Darjeeling occasionally in the eaves of houses, but generally on a bank; makes a neat nest of moss, lined with black fibres and hair, and has generally four eggs, dull white, with small rufous spots."

Mr. Gammie says: "I took a nest of this species out of an indentation in a dry overhanging bank on the 30th April 1873. This was at Rishap, at an elevation of about 3,000 feet. It contained three fresh eggs. The eggs and nest were of the usual type."

In shape the eggs are a moderately broad oval, somewhat compressed towards the smaller end. The ground-colour is pinky white; in some entirely devoid of markings, in others with a more or less conspicuous reddish pink zone or cap of mottled or clouded speckly markings, generally nearly confluent. These eggs have little or no gloss, and obviously belong to the same type as those of the *Niltavas*. The want of distinctness in the markings separates them from those of *Tchitrea paradisi*, *Dicrurus albirictus*, and the like. The colouring is a clouded zone or cap at the best, never defined specks or spots.

In length the eggs vary from 0·72 to 0·85 inch, and in breadth from 0·46 to 0·62 inch, but the average, a very large series, is 0·78 nearly by 0·57 inch.

302.—*Stoporala albicaudata, Jerd.*

So far as we yet know, the Nilghiri Blue Fly-catcher breeds only on the Nilghiris, at Ooty, Conoor, Neddiwattam, Kartairy, Kotagherry and other places, from about 3,800 to 6,200 feet above the sea. It will probably be found to breed also in the Anamalies and Pulneys.

Nests of this species, sent me from the Nilghiris, and found in holes or depressions of banks, were soft masses of beautiful moss, with a slight substructure of coarse moss and lichen, measuring some 5 inches in external diameter, and with slight depressions some 2½ inches in diameter and perhaps 1 inch in depth towards one side. The egg cavity could not be said to be lined, but a greater proportion of very fine black moss roots entered into the composition of the nest here than elsewhere.

I have never taken the nests of this species myself, and I shall leave my correspondents to give their own accounts of its nidification.

Miss Cockburn says :—

"I have had the pleasure of finding three of the Blue Fly-catchers' nests. The first one was built in a bower (not far from our house), the walls of which, being of stone and having many little holes, a pair of these birds had chosen a snug one to hatch their young in. The other two nests were in holes in the banks of roads. All were extremely neatly built with moss, and lined with hair, and were made very warm and comfortable. They always lay four eggs of a light fawn colour, the circle at the thick end being a darker shade. The months in which they breed are March and April."

Mr. W. Davison remarks : "*Stoporala albicaudata* breeds on the Nilghiris in the latter end of April and May ; it nests in holes, either of trees or banks, not unfrequently under the eaves of houses. The nest is built entirely and always of green moss ; the egg cavity lined with moss-roots. The eggs, generally three in number, are of a pale salmon-pink, indistinctly ringed at the larger end and sparingly spotted over the entire surface with a somewhat darker shade. These eggs vary very much in shade of colour, sometimes being very dark, at others nearly white ; during the breeding season the males are continually singing, though the song is not much to speak of."

Mr. H. R. P. Carter writes : "On the 12th March I found one egg in a nest near Conoor ; on the 13th a second had been laid. I tried to *catch* the bird on the nest several times, but failed, and on the 17th I shot it. The nest was placed in a hole in a small cutting made to level a road, 2½ feet from the ground. It was cup-shaped, and composed of coarse moss with no lining. I think three eggs seem to be the normal number. The eggs have a yellowish white ground, mottled brownish at one end, and with very faint mottlings all over ; this bird is very shy. I tried several times to catch it with horse-hair nooses, but without success, as it never came to the nest whilst they were set. It always builds in banks. On 1st April found a nest in a cutting by the side of a road near Conoor with three young ones about nine days' old."

Mr. J. L. Darling, Junior, tells us that this species nests "in banks, trees, rocks, in any convenient hole, at all heights from the ground, sometimes as far as 30 feet. I have found two nests in bridges between the planking and beams, and two under the eaves of houses. The nest is round, and is built entirely of moss; very rarely a few twigs are used as a foundation. There is no regular lining, but sometimes a few of the breast-feathers of the bird do duty as such. The nest may measure on the outside from 4 to 6 inches in diameter, inside from 2 to $2\frac{1}{2}$ inches in diameter, 2 in depth. The eggs are from two to four in number, generally three, rather oblong in shape, about $\frac{4}{5}$ in. in length, and little less than $\frac{3}{5}$ inch in breadth.

"The color is whitish-brown, getting darker towards the thick end. There are sometimes specks of brown. The eggs might be mistaken by an inexperienced person for the Orange-and-black Fly-catchers."

The eggs, of which many have been sent me, vary a good deal in size, shape, and color, but they are almost without exception larger and more highly coloured than those of *melanops*. They belong of course to the same type as these and the *Niltavas*. In shape they are elongated, at times excessively elongated, ovals, with *normally* little or no gloss. The ground colour varies from creamy-white to a pretty warm *café au lait* colour. In some eggs there are no discernible markings; only the tint grows deeper and brighter towards the large end, which is often obscurely capped with a brownish red; in others the surface is minutely and faintly speckled, more or less all over, but most densely at the large end, with pale reddish brown, brownish red, or red, as the case may be. In some few eggs there is a regular zone of minute red specks round the large end. In length the eggs vary from 0·76 to 0·88 inch, and in breadth from 0·55 to 0·62 inch, but the average of some fifty eggs is 0·81 nearly by 0·59 inch nearly.

304.—*Cyornis rubeculoides, Vig.*

I have never seen the nest of the Blue-throated Red-breast. Captain Hutton says: "Arrives in the neighbourhood of Mussoorie in April, and breeds in June, on the 13th of which month I took a nest from a hole in a bank by the road-side in a retired and unfrequented situation. I afterwards found another nest in a hole of a rock, also in a retired spot. The elevation was about 5,000 feet; externally this nest is composed of green moss and lined with black fibrous lichens, like hair. The eggs are four in number, of a dull and pale olive green, faintly or indistinctly clouded with dull rufous or clay colour."

According to Mr. Hodgson's notes and drawings, this species begins to lay in Nepal in April, and the young are ready to fly in June and July; the nest is placed in the hollow of some decayed tree, or in a ledge of rock, more or less over-hung. It is composed of grass, dry leaves, moss, and moss-roots, and is lined inside with fine hair-like blackish moss-roots; it measures about 4 inches in diameter externally and about 1·5 in height; the diameter of the cavity is about 2 inches. It lays three or four eggs, broad ovals, slightly glossy, of a dingy reddish *café au lait* colour, measuring 0·72 by 0·52. It breeds only once a year; both sexes aid in hatching and rearing the young.

Several eggs of this species, which were sent me by Captain Hutton, resemble much, as might have been expected, those of *Cyornis Tickelliæ*, but they seem to average somewhat shorter and broader. In shape they are ovals, some elongated, some rather broad, and all of them a little compressed towards one end. The ground colour is greenish or brownish stone colour; some exhibit no markings; others only a little grey freckling, but typically they have a very pale purplish brown mottled zone near the large end, and occasionally frecklings of the same colour over the whole of the large end of the egg. They have little or no gloss. They vary in length from 0·68 to 0·76 inch, and in breadth from 0·56 to 0·66 inch, but the average of the eggs is 0·73 nearly by 0·62 inch.

306.—*Cyornis Tickelliæ, Blyth.*

Tickell's Blue Red-breast breeds in May and June throughout Central India, and in the Nilghiris and Western Ghâts to an elevation of at least 5,000 feet.

Mr. Nunn, the first of my correspondents who observed this bird breeding, procured a nest with two fresh eggs at Hoshungabad, Central Provinces, on the 24th of June 1868. The nest was placed in a niche in a wall on the banks of the Nerbudda. It was a small, rather deep cup, compactly woven of fine grass roots and lined with similar materials, but of a still finer quality; externally a few dry leaves were incorporated in the structure, much in the same manner as is habitually done by the Bulbuls and many sylvine birds. The nest measured internally 2 inches in diameter by 2½ deep.

Mr. Nunn shot the parent bird off the nest and kindly sent it to me with the nest and eggs, so that no doubt as to the authenticity of the eggs can exist. A nest taken by Miss Cockburn below Kotagherry on the 27th May was placed in a hole between two decaying branches of a tree at a height of 6 or 7 feet from the ground and in the close proximity of water. The nest was composed almost entirely of moss and moss-roots, the latter forming the lining, a good many dead leaves being incorporated in the exterior surface. The nest was between 3 and 4 inches in diameter externally; the egg cavity very shallow.

Two eggs of this species, which, with the nest and parent bird, were sent me by Mr. Nunn, are of a moderately elongated oval shape, somewhat obtuse at the small end. The ground colour is dingy greyish white, and the egg is throughout excessively finely freckled and mottled with dingy reddish brown. The markings are everywhere indistinct and feeble, but they are greatly concentrated and nearly confluent towards the large end, where they form in one a fairly marked zone, in the other an irregular and ill-defined cap. These eggs differ a good deal in their character both from those of *Eumyias* and *Niltava*. Other eggs, taken in May and June, and sent me by Miss Cockburn from Kotagherry, Nilghiris, are very similar to those already described, but in one of them the markings are so closely set that the egg appears throughout a pale brownish rufous, regularly mottled all over, slightly paler.

Another egg is similar, but the general tint is faintly rufescent *café au lait*. As a rule, the eggs have a faint gloss, but one or two of them are absolutely glossless.

In length the eggs vary from 0·74 to 0·8 inch, and in breadth from 0·53 to 0·58 inch, but the average of five eggs is 0·76 by 0·56 inch.

310.—*Muscicapula superciliaris, Jerd.*

The White-browed Blue Fly-catcher, though extending its cold weather migration far into Southern India, breeds only, so far as I have yet ascertained, in the Himalayas at elevations of from 5,000 to nearly 10,000 feet; from Darjeeling to Murree it breeds everywhere, not only in the outer ranges, but far into the interior. I found a nest only a march south of Gungootree; I have received others from the Sutlej Valley above Chini, from Minalee close to the foot of the Rotung, from the Sind Valley, Cashmere, just at the foot of the Zojee La, and I know of one being found at Dras. They lay from the middle of April to the middle of June, building a small cup-shaped nest about 3 inches in diameter, of moss and moss-roots, and lined with these latter, and at times a little fine hair, in holes of trees or even occasionally between two stones of the terraced wall of some fallow or deserted field.

They lay from four to six eggs. The late Captain Beavan correctly remarked that this species was "not at all rare about Simla, in gardens and forest glades, and not at all shy. I discovered the nest of this species on the 10th of May at that station, with four young ones in it. It is a pretty little cup-shaped structure, composed of moss and hair, placed at the bottom of a small hole in an ilex, at no great depth inside."

Writing from Murree, Captain C. H. T. Marshall notes having secured "sixteen or eighteen nests between the beginning of May and the end of June, in small holes in rotten branches, or trunks of trees, sometimes close to the ground, sometimes very high up. Eggs, five in number, of a yellowish brown colour, almost round, about ·6 inch long and ·45 broad. The general elevation averages 6,500 feet; they do not build in the lower hills."

The eggs are generally short broad ovals, slightly pointed towards the small end; a few are very decidedly pointed, and occasionally the whole egg is somewhat elongated; they have a slight gloss.

Looked at from a little distance, the whole egg appears to be a dull pale brownish pink or pinkish brown, somewhat deeper towards the large end, the tint varying in intensity in different specimens. Closely examined, the ground colour appears to be a dull pale greyish green, almost entirely washed over with a more or less mottled shade of brownish red or pink, which, while it varies in different eggs, is almost without exception considerably deeper about the large end, where in some eggs it forms an utterly undefined, but none the less apparent, cap.

In length the eggs vary from 0·58 to 0·65 inch, and in breadth from 0·46 to 0·5 inch, but the average of 20 eggs is 0·61 nearly by 0·48 inch.

314.—*Niltava sundara, Hodgs.*

The Common Niltava breeds everywhere in the Himalayas, at any rate from Darjeeling to the valley of the Beas, (I have no record of its breeding further west,) from the middle of April to the middle of May. It places its nest in some rocky ledge or crevice, or in or about some decayed stump or fallen trunk.

A nest of this species which I took near Kotegurh on the 15th May, was a mere pad of moss, about 5 inches in diameter and 1½ inch in thickness, with a very broad shallow depression in the centre. In and about the inner surface of this depression, a certain amount of very fine silky fur and one or two downy feathers were interwoven, making a kind of lining. The nest was placed in a hollow at the base of an aged oak. Four is, I believe, the normal number of the eggs.

According to Mr. Hodgson's notes and drawings this species lays in Nipal in April and May; it constructs its nest, which is compact and large for the size of the bird, of green moss, lined with black moss-roots; it measures exteriorly about 5 inches in diameter and 3 in height. The cavity is about 2·5 inches in diameter; of another nest he gives the external diameter as 4·5 inches, height 3, internal cavity diameter and depth 1·5. The nest is placed against the root of some tree or on some ledge of rock, or in some crevice in a cliff or bank. Three or four eggs are laid, measuring about 0·9 by 0·65 inch, of a nearly uniform pinky fawn colour, slightly darker towards the large end.

"At Darjeeling," Dr. Jerdon says :— "I several times procured the nest of this bird, situated on a bank, or in the cleft of a rock, or against the fallen stump of a tree. It is loosely made of moss, lined with a few black fibres; and the eggs, three or four in number, are reddish white, with the large end nearly covered with minute brick red spots, forming a large patch of dull brick red. The eggs are remarkably long-shaped."

Mr. Gammie says: "I found a nest of this species in a cleft of a rock near Rungbee, at an elevation of 3,800 feet on the 19th May. Tbe nest was of the usual type; a pad of beautiful soft green moss, lined with the finest and softest moss-roots, and contained three fresh eggs. These, though of the normal type of colouring, were quite abnormally small, measuring 0·77 and 0·8 inch in length, and 0·58 and 0·59 inch in breadth. We snared the bird on the nest, so that there could be no doubt about the species."

The eggs are commonly a rather long oval, somewhat pointed towards one end, but spherical and pyriform varieties occur; as usual in this family, they are almost entirely devoid of gloss. The ground colour is a pale reddish buff, somewhat paler than that of *Eumyias albicaudata*, and the egg is throughout very faintly freckled and mottled with a sort of dingy pink, which is most apparent towards the large end. This mottling is only apparent when the eggs are closely looked into; at a little distance they appear a uniform very dingy pale buff, slightly darker towards the large end.

In length the eggs vary from 0·87 to 1·0 inch, and in breadth from 0·68 to 0·75 inch, but the average of a large series is 0·93 by 0·71 inch nearly.

315.—*Niltava Macgrigoriæ, Burt.*

Macgregor's Niltava breeds in Nipal and Sikhim from April to June at elevations of from 3,000 to 5,000 feet.

The nests sent me from Darjeeling (along with the eggs and parent birds) closely resemble those of *Eumyias melanops and albicaudata*, but are larger and more carefully built. They were placed, I am informed, on the ground, and are composed of beautiful soft moss of different kinds, the egg cavity being partially lined with excessively fine blackish brown moss-roots. The nests are fully 5 inches in external diameter and the egg cavity is about 2¾ inches in diameter and 1¾ inch in depth. A few dead leaves are sometimes incorporated in the base of the nests, which otherwise are entirely composed of beautiful soft feathery mosses and their delicate roots.

One nest, found at Rishap, Darjeeling, on the 7th May, at an elevation of about 4,000 feet, contained three fresh eggs, but four is, I believe, the full complement.

According to Mr. Hodgson this species breeds in Nipal in April and May, laying three or four unspotted pinkish or fawny white eggs; the nest is entirely composed of green moss, in which fine moss-roots are intermingled and is also lined with these. It is nearly globular in shape, from 3·5 to 4 inches in external diameter and fully 2 inches in height; the cavity is about 2 inches in diameter and 1 inch in depth. The nest is placed in some hole in a decaying prostrate trunk, or at the roots of some yet standing tree, or again on some ledge of rock. The young are ready to fly by July.

I have several eggs sent from Darjeeling, which I am assured belong to this species. They are of the same type as those of *N. sundara* and *Eumyias albicaudata,* and are intermediate in size between these. As a rule, they have the reddish brown mottling rather darker and better marked than in *sundara,* but otherwise, except for difference of size, they would scarcely be distinguishable from those of this latter species.

In length they vary from 0·78 to 0·86 inch, and in breadth from 0·6 to 0·63 inch, but the average of ten eggs is 0·83 nearly by 0·62 inch.

316.—*Niltava grandis, Blyth.*

Dr. Jerdon observes of the Great Niltava that "its nest is very like that of *sundara,* being loosely made of moss, and placed in similar situations, and the eggs only differ in their larger size. When the nest is placed on the cleft of a rock, the shape of the nest is accommodated to it, so that I have seen the nest shaped like a parallelogram, long, quite flat on the sides, and the two ends just slightly rounded."

In Nipal, according to Mr. Hodgson's notes, this species lays during April and May, building a more or less massive nest of green moss and lichen, lined with fine moss-roots. The dimensions of one nest are recorded as—exterior diameter 4·5 inches, height 2·5, diameter of cavity 2·65, depth 1·5 inches, but they are said to be often larger. They are placed on the branch of some tree, between three or four slender shoots, at an elevation of a few feet above the ground, or at other times in some hole of a decaying tree or on some ledge of rock. They lay four buffy eggs, measuring about 1 inch in length by about 0·73. They have only one brood in the year, and the young are fledged and ready to fly about the middle of July.

The general character of the eggs is much that of those of *N. sundara, Eumyias melanops,* and *albicaudata.* I have never taken the eggs myself, but those that I have received from Dr. Jerdon and Captain Masson from Darjeeling differ slightly in size, as well as in intensity of colouring.

Those that Dr. Jerdon gave me are larger than those sent me with nests and female birds by Captain Masson, averaging 1·04 inch in length by 0·73 inch against ·96 in length by 0·72 inch in breadth, which is what Captain Masson's eggs average.

In shape all the eggs are much alike, being long regular ovals, only slightly compressed towards one end, and they have all a very faint gloss. The eggs brought me by Dr. Jerdon are of a uniform very pale fawn or dingy pinkish white colour, faintly clouded at the large end with reddish pink. Captain Masson's eggs have a sort of pale buffy white ground, more or less streaked, clouded, or suffused, chiefly at the large end, with buffy fawn colour. Both doubtless belong to this species.

320.—*Digenea leucomelanura, Hodgs.*

The Slaty Fly-catcher breeds, we know, throughout the Himalayas from Nipal to Cashmir, at elevations of from 5,000 to 7,000 feet, but the only persons, I know of, who have taken the eggs, are Captain Cock and Mr. Brooks, who found several nests in Cashmere, and to whom I owe both nests and eggs.

The nests are massive little cups, with an external diameter of from 3½ inches to nearly 4 inches, and from 1¾ to 2¼ inches in height. The egg cavity is comparatively small, not exceeding 2 inches in diameter and 1¼ inch in depth. The principal material of the nest is fine moss, but with this is intermingled a quantity of fine wool and fur, a few cobwebs, and especially towards the base of the nest tiny dry leaves, lichen, and fir-needles. There is no separate lining, but the interior of the egg cavity has the moss and wool very compactly and smoothly woven together, so as to form a beautifully soft and even bed for the eggs. Nests taken in Cashmere on the 3rd and 4th June contained three and four eggs respectively. Mr. Brooks remarks that "this species is not uncommon in Cashmere, wherever there are pine woods. As in the case of *Ianthia rufilata,* many pairs of these birds which were breeding had the male in the plumage of the female! Only two pairs which I shot had blue males.

"The nest is a neat little cup, placed in a hollow in the side of a tree trunk. The eggs, four in number, are of a pale buff colour, clouded with dull, pale rufous towards the larger end; size, ·62 by ·48 inch."

The eggs of this species vary very much in size and shape. Some are comparatively elongated ovals, some short and broad; all are somewhat compressed, and some are slightly pointed towards the smaller end. The ground colour is a dull white, but only in a few of the eggs is any portion of this visible, the major portion of the surface even in these, and the whole surface in most eggs, being excessively finely freckled, and in many cases uniformly tinted, with reddish *café au lait* colour, or pale salmon buff; in many eggs the colour is deeper and redder at the large end, forming an undefined cap. Some of the eggs have a slight gloss, others are absolutely glossless.

These eggs are very similar in tint to those of *Eumyias, Niltava* and other genera of this family.

In length they vary from 0·58 to 0·69 inch and in breadth from 0·47 to 0·5 inch, but the average of ten eggs is 0·62 inch, by a little more than 0·48 inch

321.—*Digenea superciliaris, Blyth.*

According to Mr. Hodgson's notes the Rufous-breasted Fly-catcher breeds. in Nipal and about Darjeeling from April to June. They build on the ground under the roots, or in some cavity at the base, of a tree. The nest is composed of moss and moss-roots, closely lined with the latter; it is a deep cup, with an exterior diameter of 2·75 inches, and a height of about 2 inches, with a cavity about 1·5 inch in diameter and depth. Four eggs is the usual number laid; sometimes only three. The eggs are rather elongated ovals, having a pale greyish or brownish white ground, finely freckled and mottled, chiefly at the large end, with dingy brownish red. As figured, the eggs measure 0·68 by 0·44 inch.

323 ter.—*Erythrosterna hyperythra, Cabanis.*

Mr. Brooks says that the Indian White-tailed Robin Fly-catcher, which he then called *parva*, "breeds sparingly in Cashmir at from 6,000 to 7,000 feet elevation. The males in breeding plumage have the red of the breast bordered on each side by a stripe of velvet black. This is not shown in Dr. Bree's illustration. In winter the black border disappears; nor is it regained before the birds leave the plains of India in March and April. The song is sweet, loud and robin-like, but short. I failed to find a nest."

324.—*Erythrosterna pusilla, Blyth.*

As I interpret Mr. Hodgson's drawing, his No. 898 is *Erythrosterna pusilla*, and not, as Mr. Gray identifies it, *D. superciliaris*. It perfectly agrees with the former, and not at all with the latter; and moreover, in his manuscript notes, Mr. Hodgson gives a separate account of the nidification of the two, and he further figures and describes the nests and eggs differently. Accepting this view of the case, Mr. Hodgson's notes contain the following account of the nidification of the present species, *E. pusilla*, the Little Grey Fly-catcher:—"The birds begin laying in April; they build their nests at the height of 3 or 4 feet from the ground in some slender fork where three or four twigs diverge; the nest is a deep cup, very large for the size of the bird, composed of mosses and moss-roots and lined with the latter, and more or less surrounded externally with dry bamboo leaves. One nest measured was externally 4·62 inches in diameter and 2·75 inches in height, with a cavity of 2 inches in diameter and nearly the same in depth. They lay three or four eggs, pale buffy or pinkish buffy, feebly freckled with reddish brown, chiefly towards the large end."

327.—*Tesia castaneo-coronata, Burt.*

According to Mr. Hodgson's notes and figures the Chesnut-headed Wren builds a large globular nest, more or less egg-shaped, some 6 inches high and 4 in breadth, composed of moss-roots and fibres, and lined with feathers, and with a circular aperture on the middle of one side about 1·5 inch in diameter. The nest is placed in some clump of shoots or thick bush (the twigs of which are more or less incorporated in the sides of the nest) at a height of 1 or

2 feet from the ground. The birds lay in April and May three or four eggs, which are figured as moderately broad ovals, somewhat pointed at one end, reddish (apparently something like a *Prinias,* though this seems incredible) and measuring 0·66 by 0·48 inch.

Dr. Jerdon says: "A nest made chiefly of moss, with four small white eggs, was brought me as the nest of this bird. It was of the ordinary shape, rather loosely put together, and the walls of great thickness. It was taken from the ground on a steep bank near the stump of a tree."

The three eggs in my museum supposed to belong to this species pertained to this nest, and are excessively tiny, somewhat long oval eggs of a pure, dull, glossless, unspotted white, very unlike our English Wren's egg and certainly not one-half the size. Dr. Jerdon was not quite certain to which species of *Tesia* these eggs belonged, and I therefore only record this "*quantum valeat.*" They measure 0·55 and 0·6 inch in length by 0·4, 0·42 and 0·45 inch in breadth. I am inclined to believe that both nest and eggs belonged to *Anura pusilla,* Hodgs.

328.—*Tesia cyaniventris, Hodgs.*

According to Mr. Hodgson's notes the Slaty-bellied Wren breeds much like the preceding. It constructs a huge globular nest of green moss and black moss-roots, which it fixes in any dense dry shrub, or clump of shoots, many of which it incorporates in the walls of the nest. The nest measures externally about 7 inches in height and 5 inches in width; it has a circular aperture on one side, a little above the middle, about 2 inches in diameter, and it is placed at a height of 1 or 2 feet from the ground. Three to four eggs are laid; these are figured as rather broad ovals, somewhat pointed towards one end, with a whitish ground, profusely speckled and spotted, especially towards the large end where the markings are nearly confluent, with bright red, and measuring 0·72 by 0·54 inch.

331.—*Anura caudata, Blyth.*

The Tailed Hill Wren, according to Mr. Hodgson's notes, lays in April and May, building a deep cup-shaped nest about the roots of trees or in a hole of fallen timber; the nest is a dense mass of moss and moss-roots, lined with the latter. One measured was 3·5 inches in diameter and 3 in height; externally, the cavity was 1·6 inch in diameter and about 1·0 inch deep. They lay four or five spotless whitish eggs, which are figured as broad ovals, rather pointed towards one end and measuring 0·75 by 0·54 inch.

333.—*Troglodytes nipalensis, Hodgs.*

The Nipal Wren breeds in May and June throughout the Himalayas and far into Thibet, at elevations of from 6,000 to nearly 10,000 feet. I have never seen the nest, though I possess eggs taken by Captain Cock and Mr. Brooks in Cashmir. The latter says :—" Only two nests of this bird were found (both at Gulmerg), one having four eggs and the other three. In the latter case the full number was not laid, as the nest, when first found, was empty; on three successive mornings an egg was laid and then they were taken.

" In shape they vary as much as do those of the English wren, and like them they are white, sometimes minutely freckled with pale red and purple grey specks, which are principally confined to the large end, with a tendency to form a zone. Other eggs are plain white, without the slightest sign of a spot, but these, I think, must be the exception, for the egg of *T. vulgaris* is usually spotted. The egg has very little gloss and the ground colour is pure white."

The eggs are very large for the size of the bird. There appear to be two types. The one somewhat elongated ovals, slightly compressed towards the lesser end, the others broad short ovals decidedly pointed at one end. Some eggs are perfectly pure unspotted white; others have a dull white ground, with a faint zone of minute specks of brownish red, and tiny spots of greyish purple towards the large end, and a very few markings of a similar character scattered about the rest of the surface. All the eggs of the latter type vary in the amount and size of markings; these latter are always sparse and very minute. The pure white eggs appear to be less common. The eggs have always a slight gloss, the pure white ones at times a very decided, though never at all a brilliant, gloss.

In length they vary from 0·61 to 0·7 inch, and in breadth from 0·5 to 0·52 inch. Mr. Brooks considers that there are two nearly allied species, one the eastern, and the other the western, form. He may be right, but I have hitherto, with a large series from *all* parts of the Himalayas, failed to satisfy myself of the fact.

338.—*Brachypteryx cruralis, Blyth.*

According to Mr. Hodgson's notes and drawings, the White-browed Short-wing breeds in April and May. It constructs its nest a foot or so above the ground amongst grass and creeping plants at the base of trunks of trees; it is composed of moss and moss-roots, is somewhat globular in shape, and is firmly attached to the creepers; dried bamboo leaves and pieces of fern are here and there fixed to the exterior, and the nest is lined with hair-like fibres; the entrance is at one side and circular. One nest measured 7 inches in height, 5·5 in width, and 3·38 from front to back. The aperture was 2 inches in diameter. The eggs (four in number, or at times three); are pure white, broad ovals pointed at one end, measuring 0·9 by 0·65 inch. This species breeds in the central regions of Nipal and in the neighbourhood of Darjeeling.

339.—*Callene rufiventris, Blyth.*

I have been favored with nests of the Rufous-bellied Short-wing by Mr. Carter, who took them from holes or depressions of banks in the Nilghiris in April and May. They closely resemble nests of *Niltava Macgrigoriæ* from Darjeeling. They are soft masses of green moss, some 4 or 5 inches in diameter externally, with more or less of a depression towards one side, lined with very fine dark moss roots. This depression may average about 2½ inches across and ¾ inch in depth. But they vary a good deal. Mr. Carter says: "I have found the nests of this species, about Conoor in May, in holes of banks, on roads, running through thick sholahs (*i. e.*, jungles not amounting to forests). The nests are of moss, shallow, lined with fine root-fibres, the cavity about 3·5 inches in diameter. They lay two eggs, pale olive, shading into a decided brownish red at the larger end. The old birds are very shy in returning to the nest when watched; indeed, they are always shy, hiding in the brushwood of jungles or amongst fallen timber along which they almost creep."

Mr. Davison informs me that "this species breeds on the Nilghiris from about 5,500 feet to about 7,000 during April and May, building in holes of trees, crevices of rocks, &c., seldom at any great elevation above the ground. The nest is composed of moss, lined with moss and fern-roots. Two or three eggs are laid."

The few eggs I possess, which I owe to Messrs. Carter and Davison, and which were taken by them in the Nilghiris, have a pale olive-brown ground with, at the large end, an ill-defined mottled reddish-brown cap. In some specimens the mottling extends more or less over the whole egg, though always most dense about the larger end. Though much larger and of a more elongated shape, they not a little resemble some specimens of the eggs of *Pratincola indica* that I possess. In shape they are long ovals, recalling in that respect those of *Myiophoneus Temminckii*; they have less gloss than the eggs of most of the Thrushes.

In length they vary from 0·97 to 1·02 inch, and in breadth from 0·65 to 0·69 inch.

339 bis.—*Callene albiventris*, *Blanford.*

The Revd. S. B. Fairbank, to whom I have owed much useful information and many valuable specimens, kindly sent me the subjoined account of the nidification of the Pulney Short-wing in the Pulney Hills at an elevation of about 6,500 feet:—

"In April, I found a nest in a hole in the side of the trunk of a large tree some 2 feet from the ground. The hole was just large enough for the nest, and was lined with fine roots. I surprised the bird on her nest several times. There were two eggs in the nest when I first found it that were "hard-set." A month afterwards she laid two more in the same place, and I took them in good condition. One egg measures 0·9 by 0·68 inch, and another 0·94 by 0·68 inch. The ground color is gray, with a tinge of green, and it is thickly covered with small spots of bistre."

Mr. Blanford, who saw the eggs, which I never did, describes them (and by analogy I should infer more correctly) as "of an olive brown colour, darker at the larger end, measuring 0·93 by 0·63 inch."

340.—*Callene frontalis*, *Blyth.*

Mr. Blyth says that Mr. Hodgson figures the nest of the Blue-fronted Shortwing as domed and like a Wren's, with clay-coloured eggs. There is no such figure amongst the many hundreds of original drawings (of which those in the British Museum are mostly copies) lent me by Mr. Hodgson.

342.—*Myiophoneus Horsfieldii, Vig.*

Mr. W. Davison says : "The Malabar Whistling Thrush (rather a misnomer, by the way) breeds on the slopes of the Nilghiris, never ascending higher than 6,000 feet. The nest is always placed on some rock in a mountain torrent; it is a coarse and, for the size of the bird, a very large structure, and though I have never measured the nest, I should say that the total height was about 18 inches or more, and the greatest diameter about 18 inches. Exteriorly it is composed of roots, dead leaves, and decaying vegetation of all kinds; the egg cavity, which is saucer-shaped and comparatively shallow, is coarsely lined with roots. It breeds during March and April."

Miss Cockburn says: "A nest of this bird was found on the 22nd of March in a hole in a tree situated in a wood at the height of about 40 feet from the ground. Two bamboo ladders had to be tied together to reach it, for the tree had no branches except at the top. The nest consisted of a large quantity of sticks and dried roots of young trees, laid down in the form of a Blackbird's nest. The contents of it were three eggs. They were quite fresh, and the bird might have laid another. The poor birds (particularly the hen) showed great boldnes and returned frequently to the nest, while a ladder was put up and a man ascending it."

Such a situation for the nest of *this* bird may seem incredible, but my friend Miss Cockburn is a most careful observer, and she sent me one of the eggs taken from this very nest, and it undoubtedly belonged to this species; moreover, there is no other bird on the Nilghiris that she, who has figured most beautifully all the Nilghiri birds, could possibly have mistaken for this species. At the same time, the situation in which she found the nest was altogether unusual, and exceptional.

Dr. Jerdon says : "I once procured its nest, placed under a shelf of a rock on the Burliar stream, on the slope of the Nilghiris. It was a large structure of roots, mixed with earth, moss, &c., and contained three eggs of a pale salmon or reddish-fawn colour, with many smallish brown spots," and such is unquestionably the usual situation of the nest.

The eggs of this species, which I have received from Kotagherry and other parts of the Nilghiris, are broad, nearly regular ovals, slightly compressed towards the lesser end; considerably elongated, and more or less spherical, and pyriform varieties occur. The shell is fine, and has a slight gloss; the ground colour is pale salmon-pink or pinkish-white. The whole egg is finely speckled, spotted, and splashed with pinkish-brown or brownish-pink. The markings, everywhere very fine, are often considerably more dense at the large end, where they are not unusually more or less underlaid by a faint pinkish cloud, with which they form an irregular ill-defined and inconspicuous cap.

In length they vary from 1·1 to 1·35 inch, and in breadth from 0·88 to 1·02 inch.

343.—*Myiophoneus Temminckii, Vig.*

The Yellow-billed Whistling Thrush breeds throughout the Himalayas from Assam to Afghanistan, in shady ravines and wooded glens, as a rule, from an elevation of 2,000 to 5,000 feet, but, at times, especially far into the interior of the hills, up to even 10,000 feet.

They lay during the last week of April, May, and June. The number of eggs varies from three to five.

The nest is almost invariably placed in the closest proximity to some mountain stream, on the rocks and boulders of which the male so loves to warble, sometimes on a mossy bank; sometimes in some rocky crevice hidden amongst drooping maiden-hair; sometimes, on some stream-encircled slab, exposed to view from all sides, and not unfrequently curtained in by the babbling waters of some little waterfall behind which it has been constructed. The nest is always admirably adapted to surrounding conditions. Safety is always sought either in inaccessibility or concealment. Built on a rock in the midst of a roaring torrent, not the smallest attempt at concealment is made; the nest lies open to the gaze of every living thing, and the materials are not even so chosen as to harmonize with the colour of the site. But if an easily accessible sloping mossy bank, ever bejewelled with the spray of some little cascade, be the spot selected, the nest is so worked into and coated with moss as to be absolutely invisible if looked at from below, and the place is usually so chosen that it cannot well be looked at, at all closely, from above.

Captain Unwin sent me an unusually beautiful specimen of the nest of this species, taken early in May in the Agrore Valley—a massive and perfect cup, with a cavity of 5 inches in diameter and 3 inches deep; the sides fully 2 inches thick; an almost solid mass of fine roots (the finest towards the interior) externally intermingled with moss, so as to form, to all appearance, an integral portion of the mossy bank on which it was placed. In the bottom of the nest were interwoven a number of dead leaves, and the whole interior was thinly lined with very fine grass-roots and moss. In this case the nest had been placed on a tiny natural platform and was a complete cup; but in another nest, also sent by Captain Unwin, the cup, having been placed on the slope of a bank, wanted (and this is the more common type) the inner one-third altogether, the place of which was supplied by the bank-moss *in situ*. In this case, although the cavity was only of the same size as that above described, the outer face of the nest was fully 6 inches high, and the wall of the nest between 3 and 3½ inches thick. The former contained three much incubated, the latter four nearly fresh, eggs.

A nest from Darjeeling which was taken on the 28th July, at an elevation of about 3,500 feet, from under a rock which partly overhung a stream and contained two fresh eggs, was composed in almost equal proportions of fine moss-roots and dead leaves with scarcely a trace of moss. In this case the nest was entirely concealed from view, and no necessity, therefore, existed for coating it externally with green moss to prevent its attracting attention.

Dr. Jerdon remarks: "I have had its nest and eggs brought me (at Darjeeling); the nest is a solid mass of moss, mixed with earth and roots, of large size, and placed (as I was informed) under an overhanging rock, near a mountain stream. The eggs were three in number, and dull-green, thickly overlaid with reddish specks."

"In Kumaon," writes Mr. R. Thompson, "they breed from May to July, along all the smaller hill streams, from 1,500 up to about 4,500 feet. In the cold season, it descends quite to the plains—I mean the Sub-Himalayan plains. The nest is generally more or less circular, 5 or 6 inches in diameter, composed of moss and mud clinging to the roots of small aquatic plants or of the moss, and lined with fine roots and sometimes hair. A deep well-watered glen is usually chosen, and the nest is placed in some cleft or between the ledges of some rock, often immediately overhanging some deep gloomy pool."

"On the 16th June," observes Captain Hutton, writing from Mussourie, "I took two nests of this bird, each containing three eggs, and another one, containing three nearly fledged young ones. The nest bears a strong resemblance to that of the *Geocichlæ*, but is much more solid, being composed of a thick bed of green moss externally, lined first with long black fibrous lichens and then with fine roots. Externally the nest is 3½ inches deep, but within only 2½ inches; the diameter about 4¾ inches, and the thickness of the outer or exposed side is 2 inches. The eggs are three in number, of a greenish ashy color, freckled with minute roseate specks, which become confluent and form a patch at the larger end. The elevation at which the nests were found was from 4,000 to 4,500 feet; but the bird is common, except during the breeding season, at all elevations up to the snows, and in the winter it extends its range down into the Doon. In the breeding season, it is found chiefly in the glens, in the retired depths of which it constructs its nest; it never, like the Thrushes and *Geocichlæ*, builds in trees or bushes, but selects some high, towering, and almost inaccessible rock, forming the side of a deep glen, on the projecting ledges of which, or in the holes from which small boulders have fallen, it constructs its nest, and where, unless when assailed by man, it rears its young in safety, secure alike from the howling blast and the attack of wild animals. It is known to the natives by the name of 'Kaljet,' and to the Europeans as the 'Hill Blackbird.' The situation in which the nest is placed is quite unlike that of any other of our Hill Thrushes with which I am acquainted. The bird itself is as often found in open rocky spots on the skirts of the forest as among the woods, loving to jump upon some stone or rocky pinnacle, from which it sends forth a sort of choking chattering song if such it can be called, or, with an up-jerk of the tail, hops away with a loud musical whistle, very much after the manner of the Blackbird *(M. vulgaris)*."

Mr. E. C. Buck says: "I found a nest at Huttoo near Narkhunda, date 27th June 1869, on an almost inaccessible crag overhanging a torrent. It contained three eggs, but two were broken by stones falling in climbing down to the nest. Nest not brought up; one egg secured and forwarded. I saw the bird well, and have no doubt as to its identity."

Writing from Dhurumsalla, Captain Cock informed me that he had obtained several nests in May in and about the neighbouring streams, up to an elevation of some 5,000 feet. From Murree Captain C. H. T. Marshall remarks: "Several nests found in June, near running streams, about 4,000 feet up."

Dr. Stoliczka tells us that "it breeds at Chini and Sungnum at an elevation of between 9,000 and 11,000 feet."

The eggs are typically of a very long oval shape, much pointed at one end, but more or less truncated varieties (if I may use the word) occur. They are the largest of our Indian Thrushes' eggs, and are larger than those of any European Thrush with which I am acquainted. Their colouration, too, is somewhat unique; a French grey, greyish white or pale greenish ground, speckled or freckled with minute pink, pale purplish pink, or pinkish brown specks, in most cases thinly, in some instances pretty thickly, in some only towards the large end, in some pretty well all over. In the majority of the specimens, there is, besides these minute specks, a cloudy ill-defined purplish pink zone or cap at the large end. In some few there are also a few specks of bright yellowish brown. The eggs have scarcely any gloss.

In length they vary from 1·24 to 1·55 inch, and in breadth from 0·95 to 1·1 inch, but the average of fifty eggs is 1·42 by about 1·0 inch.

344.—*Hydrornis nipalensis*, *Hodgs.*

The only egg of the Nepal Ground-thrush that I have seen I myself obtained at Darjeeling, on the 19th May 1872, from a place about 4,000 feet high below Lebong. The nest was a mass of grass and leaves placed on the ground at the roots of a bush. The old bird was caught by the hand on the nest, and proved to be the female. The nest contained three hard-set eggs, of which I only succeeded in preserving two in a very shattered condition; in fact, the young were ready to hatch off. These two eggs measure 1·2 inch by 0·97 inch, and 1·3 inch by 1 inch. They are consequently very broad oval eggs with a very glossy white ground, like white China, somewhat thinly spotted and speckled with pale inky purple and purplish maroon.

345.—*Pitta coronata*, *Müll.*

My friend, Mr. F. R. Blewitt, has taken a vast number of the eggs of the Indian Ground-thrush in the neighbourhood of Raipur, Central Provinces. The nests, three of which he sent me with the eggs, were huge globular structures, fully 9 inches in horizontal diameter, and 6 inches high, with a circular aperture on one side. They were composed internally of fine twigs, notably those of the tamarisk, and grass roots; externally, of dry leaves, many of them, skeleton leaves, held in their places by a few roots or twigs. The internal cavity may have been about 4 inches in diameter. The nests were placed in brushwood and scrub jungle, either on the ground or on low branches close to the ground. The nests were taken in July and August. They also breed, I know, (though I could never find the nests) in the Doon and the northern parts of Rohilcund. Mr. R. Thompson remarks: "As this bird comes in regularly about the first week in May, and remains in the Bhabur till July or August, uttering its sweet call of two simple notes, I am led to think it breeds with us. What becomes of the bird at other seasons I do not know."

Few Indian eggs are more beautiful than those of this species. In shape they are excessively broad and regular ovals; some, indeed, are almost spherical. They are excessively glossy, more so than almost any other egg I know, except those of some of the *Fissirostres* and *Metopidius indicus*. The ground colour is China-white, sometimes faintly tinged with pink, sometimes creamy; and the eggs are speckled and spotted with, and in some eggs also painted with fine hair-like lines of deep maroon, dark purple, and sometimes brownish purple, as primary markings, and pale inky purple as secondary ones. The primary markings are scattered, in some instances pretty thickly, in others very sparingly, over the whole surface of the egg, but are always much denser towards one end, to which in some eggs they are entirely confined, and here alone the secondary markings are at all conspicuous. Here they often form a sort of nimbus round all the spots, blotches, and lines, all the interstices between which they occupy and unite to form an irregular mottled cap. There is something about the character of the egg which indicates to me that the *Pitta's* should be placed nearer the bulbuls and the orioles than the true thrushes. I should note that there is one not uncommon type in which the whole egg is devoid of markings, except within a broad zone near one end, and even here they only consist of widely scattered and minute specks of maroon and pale lilac.

The eggs vary from 0·96 to 1·07 inch in length, and from 0·81 to 0·9 inch in breadth, but the average of fifty eggs is 1·01 by 0·86 inch nearly.

346.—*Melanopitta cuculata, Hartl.*

According to Mr. Hodgson's notes and drawings the Green-breasted Ground Thrush breeds in the central regions of Nipal and about Darjeeling in April and May. They build a large globular nest, one of which measured nearly 6·75 inches in external diameter, and had a circular opening fully 3 inches in diameter on one side. They place their nests, very generally on the ground, in clumps of bamboos, and they construct them of dry bamboo leaves and twigs and other dry leaves and stems, firmly and compactly interwoven. The exterior is rough and strong; the interior lined with soft vegetable fibres. They lay four eggs, very broad ovals, glossy, with a pinky white ground, pretty thickly spotted all over with reddish and brownish purple; an egg figured measures 0·96 by 0·79 inch.

Dr. Jerdon says: "I only procured one specimen, which was killed by a Lepcha, when seated on her nest, on the banks of the great Rungít River, about 1,200 feet above the sea. The nest was composed chiefly of roots and other fibrous matter, with a few hairs, and contained three eggs of a faint greenish white, with a few reddish, and some fawn-colored spots."

347.—*Hydrobata asiatica, Swains.*

The Brown Dipper, or Water-ouzel, breeds in all the lower stream-traversed valleys of the Himalayas, from Darjeeling to Cashmir, from almost the level of the plains up to about 6,000 feet. I cannot learn that they breed higher than this, though during the summer they may be found at great elevations.

Dr. Stoliczka correctly remarks: "This species ranges, in the summer, as high as 12,000 feet at least, and I have a specimen shot at that elevation at Yeomatong in the Lachung Valley. I saw brown birds which I noted at the time as belonging to this species up to 14,000 feet, and I believe they were correctly identified, but as I secured none, they may have been *sordida*. Towards the end of October, I saw this Dipper in the great Rangít River, not 1,000 feet above the sea."

This Dipper lays at very different periods, according perhaps to season and elevation. I took a nest in an affluent of the Sutlej above Kotegurh, at an elevation of something over 5,000 feet, in the first week of May. I took two nests in Mandi below Drung, at an elevation of perhaps 3,000 feet on the 21st April. Captain Cock took two nests on the 12th and 20th March near Dhurumsala, at an elevation of about 4,000 feet; but they lay earlier also, as Captain Hutton writes to me that "on 21st December we found a pair employed in preparing a nest at Rajpore; they had selected a hole in a rock over which fell a rapid stream serving as a screen. On the 4th of January visited the spot and found the nest completed, but no eggs laid. On the 12th January again visited it and found one egg only, but did not see its color. On the 18th again visited the spot and found three eggs, but did not dare to take them out. A few days afterwards sent a man to take the nest and found that some rascal had carried off the eggs."

The nests that I found in Mandee were large balls of moss, some 7 inches in diameter, wedged into clefts of moss and fern-covered rocks—the one, half under a little cascade, the other, about a foot above the water's edge in the side of a rock standing in the midst of a broad deep stream. Each nest had a circular aperture in front, about 2·5 inches in diameter; the cavity was about 4 inches in diameter, lined with moss-roots in the one nest, and with these and a few dry leaves in the other. Each contained five eggs; other nests that I have seen were huge globular masses of interwoven moss, nearly a foot in diameter and fully 8 inches high, something like a gigantic Wren's nest, with a neatly worked circular aperture on one side and an internal cavity, about 4·5 inches in diameter and 3 inches high, lined with dry leaves and fern and fine moss-roots. I have never known more than five eggs in a nest.

The eggs which I have obtained not only from Mandi, but also from the neighbourhood of Simla, Almora, Dhurumsala and Mussoorie, are, as a rule, somewhat elongated ovals and pure white in colour, very similar to, but smaller and more elongated than, the majority of eggs of the common European Dipper. The eggs are very soft and satiny in texture, but have very little real gloss.

Most of the eggs are much pointed towards the small end, but pyriform and obtuse-ended varieties occur. The eggs remind one more of those of the Barbets than of those of the true Thrushes.

In length they vary from 0·9 to 1·08 inch, and in breadth from 0·65 to 0·79 inch, but the average of 22 eggs measured, is a trifle more than 1·0 by 0·72 inch.

350 bis.—*Zoothera marginata, Blyth.*

Dr. Jerdon tells us that he obtained the eggs of the Long-billed Brown Thrush, and that they were "like those of *Pitta*, white, with a few rusty brown spots."

351.—*Cyanocincla* cyanus, Lin.*

Captain C. H. T. Marshall, writing from Murree, remarks: "The eggs of the Blue Rock Thrush have not, we think, been recorded before from India. There is a description of them in Sharp and Dresser's Birds of Europe. We found the nest in a low stone wall at no great elevation; it contained four eggs, very pale blue, with a few small brown specks on them. The eggs are 1·1 in. in length and ·75 inch in breadth, and were taken early in June."

One of these eggs, sent me by Captain Marshall, is excessively small for the size of the bird, very much smaller than the egg of *M. saxatilis*, but there is, I think, no possible doubt of its authenticity, and it corresponds fairly with eggs collected in Greece by Dr. Krueper on the 8th June 1862. The egg is very smooth and has a fine gloss. The ground color is an excessively pale, slightly greenish, blue, and it is pretty closely speckled at the large end with very minute brownish red spots; a few similar specks are sparsely scattered over the rest of the surface of the egg. It was taken on the 7th June, and measures 1·0 by 0·73 inch.

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* I propose this generic, or subgeneric name for the sub-group which comprises *cyanus*, Lin., *solitarius*, Müll., and if *really* distinct, which I cannot quite see, *Pandoo*, Sykes.

352.—*Petrophila erythrogaster*, *Vig.*

I have only once seen the nest of the Chestnut-bellied Thrush, and that was at the end of May, above Jatingere, towards the Bubboo Pass from Kangra into Kooloo. It was placed at the root of a tree in a forest, and was a large shallow saucer, composed almost entirely of moss and lined with moss-roots; a few dead leaves were intermingled at the base of the nest. It measured about 6 inches across, but I ascertained no particulars, for, having gently caught the female on the nest with my hand and lifted her, I found four chicks just out or struggling out of the shells, and so put her back again on the nest, where she sat immoveably with her little head on one side, watching me with her bright dark eye, but apparently satisfied that I was up to no mischief.

Mr. R. Thompson says that "in Kumaon they lay in June and July, making a circular nest of mosses, twigs, and small roots, some 6 inches in diameter, on the ground, under a rock or stump, or in a hole. They affect northern well-wooded slopes from 6,000 feet upwards."

At Dhurumsala, Captain Cock obtained a nest on the 20th May containing three fresh eggs, which varied in length from 0·9 to 0·95 inch; they were all 0·7 inch in breadth. These eggs were very small, judging from the few I have seen and measured; 1 by ¾ inch is the average size.

In Nipal, according to Mr. Hodgson's notes, "this species begins to lay during April. It builds a large shallow circular nest on ledges of rocks, composed of grass stems and moss, and lined with fine roots. One such nest measured exteriorly 6 inches in diameter and 2·25 in height, while the cavity was 3·5 inches in diameter and 1·5 inch in depth. They lay four somewhat buff-colored eggs, one measured about 1·1 by 0·75 inch. They breed only once a year."

353.—*Petrophila cinclorhynchus*, *Vig.*

The Blue-headed Chat-thrush breeds throughout the Himalayas from Darjeeling to Murree, at elevations of from 4,000 to about 8,000 feet. It lays during the last week in April, May, and part of June. The nest is placed at the roots of trees, in holes in banks, and at the base of trees, or in hollows in banks overhung by tufts of grass or weeds. The nest is a rather shallow cup, neatly made of moss, grass, fir-needles and dead leaves, and lined with fine roots or a little hair, the materials varying according to the taste of the individual bird or perhaps according to locality. It measures externally from 4 to 5 inches in diameter and 2½ to 3 inches in height, and has a neat, nearly hemispherical cavity, some 3 inches wide by 1·5 in depth. The eggs are four in number.

Writing from Murree, Captain C. H. T. Marshall says: "Builds in banks under roots or tufts of grass a neat cup-shaped nest. The eggs are salmon-coloured, with a few darker red specks and spots. The nests we found were made entirely of dead pine leaves, beautifully woven together. Elevation 6,000 feet."

Mr. W. E. Brooks has recorded the following:—"On the 26th of May I shot a female of this species at Almorah, and close to where she fell was a nest in a hole of an old retaining wall, overgrown with grass. For hours the place was watched, but no bird came near the partly incubated eggs. Her breast was bare, as if she had been sitting on eggs. The male I had also shot shortly before the female. The nest was very Thrush-like in form, and was placed in just such a situation as would have been chosen by a Ring-ouzel. It was composed of fine twigs, roots, and coarse grass, and lined with finer grass. The eggs were four in number, ·91 by ·62 inch, of a pale buff or salmon color, finely mottled, principally at the larger end, with very pale reddish brown. Though they are not Thrush-like in coloring, being more like those of a Red-breast, I cannot believe that they belong to any other bird."

I may note that I have one of the eggs thus found, and that there is no possible doubt that it belongs to this species, of which I have now taken very many.

Mr. R. Thompson remarks: "In June 1865 I found a nest close to my house at Koorpatal, below Nynee Tal, with only one young one. For the last two years the same pair have constantly bred in the same place, making a fresh nest each year and bringing up two and three young ones. This year the three young ones remained with the parent birds for a considerable time. Many young ones are taken at Almorah, where the natives prize them for their song. They lay in May and June, building a circular cup-shaped nest some 4·8 inches in diameter, composed externally of mosses and roots, internally of hairs and fine fibres, on the ground, in a hole, either under a stump, a tuft of grass, or a stone. They generally breed at elevations between 3,000 and 6,000 feet."

Captain Cock long ago sent me the following note from Dhurumsala:—"Nidificates in May and June in the North-West Himalayas. Nest is composed of moss at the bottom, with layers of coarse grass, fibres and roots, internally of finer grass fibre, but it is a loosely-put-together affair, and with a little handling soon comes to pieces. It is a saucer-shaped open nest, 4 inches in diameter, generally placed on some bank by the side of a road. Parent bird fearless, sometimes choosing a very much frequented road, but still their nests are well concealed in some little niche of the bank. The parent bird may be caught with the hand when on her eggs. Lays four eggs (salmon colour or buff, caused by the numerous small spots confluent over them), usually darker towards the larger end."

The eggs appear to vary little in size or shape. They are rather long ovals, very blunt at the small end, and having a slight gloss. In colour and character they recall the eggs of *Eumyias* and *Niltava*. Looked at from a distance, the general hue of the egg is either a pale brownish pink or a dingy buff, darkest towards the large end. Closely looked into, the general tint proves to result from a pinkish white ground very closely and minutely freckled and mottled all over (but most densely at the large end) with pale, dingy brownish, salmon colour, or reddish brown. The colour, indeed, is so ill defined that it is difficult to say what it is. The eggs have a slight gloss. They vary in length from 0·87 to 0·96 inch, and in breadth from 0·7 to 0·79 inch, but the average is about 0·92 by 0·74 inch.

354.—*Geocichla cyanotus, Jard. and Selb.*

Of the White-throated Bush Thrush, Dr. Jerdon states that "Mr. Ward procured the nest in North Canara, made of roots and grass placed at no great height from the ground; and the eggs, three in number, were pale bluish, speckled with brown."

355.—*Geocichla citrina, Lath.*

The Rusty-throated Bush Thrush (it is not a bit more of a *Ground* Thrush than our old familiar English Song Thrush), breeds in the Himalayas, from Darjeeling to Murree, at elevations of from 1,500 to 5,000 feet, laying from the end of April to nearly the end of June. They build a rather broad, cup-shaped nest of moss, grass, and very fine twigs, or fir needles, lined with fine moss-roots, and at times a little hair, measuring some 5 inches in diameter, and with a cavity about 3·5 inches broad and 1·75 deep. The nest is placed in some fork of a moderate-sized tree, in the case of all that I have seen, at no great height from the ground.

They lay three, and often four eggs; and one nest found below Kotegurh contained five.

Captain Hutton, years ago, recorded the following note in regard to this species:—

"Arrives at Mussoorie at an elevation of 5,000 feet about the end of May, and returns to the plains in autumn. It breeds in June, placing the nest in the forky branches of lofty trees, such as Oak and Wild Cherry. Externally, it is sometimes composed of coarse dry grasses, somewhat neatly interwoven on the sides but hanging down in long straggling ends from the bottom. Within this is a layer of green moss, and another of fine dry woody stalks of small plants, and a scanty lining, at the bottom, of fine roots. The eggs are three to four in number, pale greenish, freckled with rufous; the spots of that colour confluent, and forming a patch at the larger end. These are not rock-lovers at all, but true forest birds, building in trees, and taking their food upon the ground, where they find it in berries and insects among the withered leaves, which they expertly turn over with their beaks, and hence the reason why the beak is almost invariably clothed with mud or other dirt. I have never seen these birds except in woods."

According to Mr. Hodgson's notes the Rusty-throated Bush Thrush breeds in Nipal and Sikhim in April and May up to a height of 4,000 or 5,000 feet. It constructs a broad saucer-shaped nest some 5·5 inches in diameter, and 2·25 in depth externally of green rock moss, and lines it with the dry leaves of *Pinus longifolia*. The cavity is about 3 inches in diameter, and about 1·5 in depth. It is placed in some convenient fork in a tree where three or four slender sprays diverge, and it lays three or four eggs.

Mr. R. Thompson, writing from Kumaon, says: "I have never found this bird except at 1,500 to 2,000 feet elevation at most. It arrives in our forests at the beginning of April, when the males begin to utter their sweet, yet loud notes, and commence breeding operations."

From Murree, Captain C. H. T. Marshall tells us that this species "builds about the beginning of June in the fork of a low tree about 6 feet up. Lays three eggs, pale greenish white, finely speckled with rufous brown, forming a patch at the larger end, 1 inch in length, ·8 in breadth."

The eggs are a broad oval, much pointed towards one end, about the size and shape of the European Water-ouzel's egg. The ground colour is dull greyish or greenish white, and each has a conspicuous mottled and speckled red brown cap at the large end. The cap is not sharply defined, and beyond it specklings and minute streaks of the same colour extend more or less over the whole of the rest of the surface of the egg; in some cases ceasing entirely, in others diminishing in frequency as they approach the smaller end.

In length the eggs vary from 0·82 to 1·1 inch, and in breadth from 0·7 to 0·82 inch; but the average of a dozen eggs is 0·99 by 0·77 inch.

356.—*Geocichla unicolor, Tickell.*

I have never found a nest of the Dusky Bush Thrush; Captain Hutton says: "This bird arrives in the hills up to 7,000 feet, and probably higher, about the end of March, the first being heard (in the year 1848), on the 26th of that month, at 5,000 feet. Every morning and evening it may be heard far and near, pouring forth a short but pleasing song from the very summits of the forest trees. It is a summer visitor only, returning to the plains in early autumn. It breeds in May and June, laying three or four eggs of a dull greenish white-freckled colour, blotched and spotted with rufous, sometimes closely, sometimes widely distributed.

"The nest is neatly made of green moss and roots lined with finer roots, and placed usually against the trunk of the tree at a place whence spring one or two twigs; sometimes it is placed upon the broad surface of a thick horizontal branch or on a projecting knob. The diameter of the eggs is 1·06 by 0·8 inch, varying a little; shape sometimes ordinary oval, at others more rounded at the smaller end."

Dr. Leith Adams tells us that this "is the regular Song-thrush of the valley of Cashmere, and is heard in every garden and grove during the breeding season; its song resembles the blackbird's; builds its nest in vineyards and in poplar trees around the villages; seen on the ranges around the valley, but not on the lesser ranges near the plains of the Punjab".

Mr. Brooks tells me that he obtained a nest in a Pollard Willow at Ramoo near Srinugger (Cashmere) on the 12th June.

From Murree, Captain C. H. T. Marshall reports "several nests in June, made of moss and fern stalks, lined with root fibres. Eggs somewhat resembling those of *M. boulboul,* only smaller, rounder, and more lightly speckled. They are the same size as those of *C. cyanus.*"

The eggs of this species vary much in shape. Some are very round; others are a rather elongated oval; but generally there is a tendency to a pyriform shape, there being a slight compression near the small end. The ground colour is greenish or greyish white, and the whole surface is more or less thickly streaked, or irregularly blotched with dull, brownish red. In some cases the markings are comparatively few and far between, the ground colour greatly predominating, except at the larger end; while in others the markings are so densely crowded, that the ground colour only shows through, here and there, as a pale mottling on a red ground. In all, however, the markings are densest at the large end. The eggs are a shade longer, but even less glossy than those of *Geocichla citrina.*

In length the eggs vary from 0·92 to 1·15 inch, and in breadth from 0·7 to 0·83 inch; but the average of 12 eggs is 1·0 by 0·75 inch.

357.—*Cichloselys Wardii, Jerd.*

Of Ward's Pied-Blackbird Capt. Hutton writes to me from Mussoorie as follows:—" This curiously-pied Thrush arrives at Jeripanee at 5,500 feet, from the southward early in April, and is then far from rare, but retires again when the breeding season is over. It breeds in June and July, making a pretty nest of green mosses and fibres like *Geocichla unicolor*, placed on the bifurcate branch of a tall tree, and the eggs both in size and colour might easily be mistaken for those of that bird."

Of this species Mr. Hodgson notes: " I procured a female and nest at Jaharpowah on the 15th May. This species breeds in trees, fixing the nest in the fork of large branches; this present nest is about 6·25 inches in external diameter, and 2·5 in height; the cavity is 3·5 inches in diameter by less than 2 in depth. It is made of moss and lined with elastic, thin grass-roots, which keep it well in shape; the eggs are four in number, pale *verditer*, spotted with sanguine brown." The eggs as figured measure about 1·06 inch in length and 0·76 in width.

Captain G. F. L. Marshall sends me from Nyneetal the following interesting note:—

" On the 22nd May I found a nest of this species at an elevation of about 5,000 feet above the sea. The nest, which contained four hard-set eggs, was placed about 5 feet from the ground on a stump of a bough that had been cut off, and between the twigs that had sprouted round it. The bush was in a thicket in one of the khuds close to running water. It was a compact cup-shaped structure, very similar to that of *G. unicolor*, built of moss and dead leaves and a little mud cemented together, and lined with roots. The eggs' cavity was 3 inches broad by 2 inches deep. The eggs were less profusely and more distinctly spotted than those of our supposed *T. cardis* = *G. dissimilis* and a little smaller; the markings were not unlike in character to those on the eggs of *Lanius lahtora*."

The only egg I have yet seen of this species, I also owe to Captain Marshall. It is a very regular, somewhat elongated oval, only very slightly compressed towards the small end. The shell is fine, but glossless. The ground colour very pale sea-green, blotched, spotted and streaked, most densely at the large end (where also a number of small pale purple clouds and spots seem to underlie the primary markings), with a moderately bright, somewhat brownish, red. This egg measures 1·01 by 0·74 inch.

358.—*Geocichla dissimilis, Blyth.*

Captain G. F. L. Marshall sent me a female of the Variable Pied Blackbird which he had shot off the nest, together with an egg, which was one of the four the nest contained.

There is no doubt that this is the bird referred to by Dr. Jerdon recently in the Ibis (187, p.) and described by Blyth as *G. dissimilis*, but I am by no means convinced that this name will stand, and I only adopt it provisionally subject to future correction. Captain Marshall says:—"I found this nest on the 16th May, near Nyneetal, on the top of the Aya-pata, at an elevation of about 7,500 feet above the level of the sea, in a small shrubby tree. The nest was placed in a fork about 7 feet from the ground, it was made of moss with a few roots intertwined, small, cup-shaped, and only concealed by its likeness to a slight swelling at the fork. Rather a disreputable structure and difficult to take out, as it consisted chiefly of building in the spaces between the three branches and then slightly lining the cavity with moss. The eggs were like those of *G. unicolor*, but a little smaller, and more sparely marked. The eggs measured about 1·025 by 0·75 inch."

The egg sent by Captain Marshall is an elongated oval, a good deal compressed towards the smaller end. The shell is fine but glossless. The ground colour a delicate pale sea-green, somewhat profusely speckled, spotted and streaked, the general character of the markings being fine, with pale reddish brown and brownish red. The markings are much more dense towards the large end where they form, in conjunction with some pale purplish, subsurface-looking clouds and spots, a partially confluent cap. The egg measures 1·06 by 0·7 inch.

360.—*Merula simillima, Jerd.*

Of the Nilghiri Blackbird Mr. H. R. P. Carter says: "At Conoor, on the Nilghiris, I have found nests of this bird from the 25th March to the 18th May, on which latter date a nest was being built. The nest is always in the fork of a tree or shrub, varying in height from 3 to 20 feet from the ground. I found several in Coffee bushes; one on a tree fern; others on Rhododendron trees and one on the Australian Acacia. In shape it is hemispherical and open at the top. There is always a foundation of mud, and a superstructure of thin twigs or coarse fibres, and it is lined generally with fine fibres, but sometimes has scarcely any lining.

"I have found from one to three eggs. In the case of the single egg, the young bird was well developed, and as it was in a tree 20 feet from the ground, it is not likely that any eggs had been taken out. As I found six nests, each containing three eggs, I think that this must be the usual number; at the same time I have been told that a greater number are sometimes laid.

"This Blackbird builds its nest in a remarkably short time. On one occasion I saw a nest completed in four days. It is just possible that there may have been a portion of a day's work done before I saw it; but even five days is a very short time for so small a bird to complete a nest which must weigh at least 2½ lbs."

The nests of this species, of which I owe a magnificent series to my friend Mr. Carter, are always, apparently, very massive structures, containing an inner skeleton of mud, completely hidden from sight by an exterior coating of moss or lichen, or fine or coarse grass roots, and an interior lining of fine grass-roots. The bird appears to lay a light foundation of dead leaves, lichen, or fern, and on this to build a more or less deep cup on the wattle-and-dab principle. A few coarse grass-roots twisted together as a skeleton, and then thickly plastered with mud or wet mould. The cup thus made is often about 4¼ inches in diameter and 2½ deep. It is then covered, externally, to the thickness of 1 or

2 inches with whatever materials are nearest at hand, grass or other roots, dry slender ferns, soft green moss, or masses of tree lichen. The interior of the cup is then first lined with rather coarse roots, and then finished off with fine ones. No particle of the clay skeleton is visible in the finished nest, which may average about 7 inches in diameter externally; stands about 4 inches high, and has an egg cavity some 3¼ inches in diameter by 2 inches deep. In all the nine nests now before me the inner earthern framework is present, but in some it extends scarcely more than ½ inch up the sides of the nest, while in others it comes up to within ¼ inch of the upper margin. Owing to the different materials used in different localities for the external coating of the nest, these vary much in appearance; but some of them, entirely coated with moss or lichen, are amongst the most beautiful structures that I know. The type of the architecture of the nest, as will be observed, is the same as that of the European Blackbird.

Mr. W. Davison remarks: "With the exception of *Pratincola bicolor*, and perhaps also *Acridotheres fuscus*, the nest of this species is the commonest at Ootacamund and its immediate vicinity. During April and the earlier part of May every thick shrub is sure to contain a nest, placed in a fork, generally about 12 or 14 feet from the ground; it is a large and very solid structure, composed internally of bits of stick, dead-leaves, roots, and moss, within which is a tolerably thick stratum of clay, and within this again fine grass and moss-roots. I think I must have taken a hundred nests in my time. The eggs are normally four, sometimes five, in number, and very variable both as regards colour and form, but the ground colour is generally a dingy bluish-green, thickly mottled, and freckled with brownish-red."

Miss Cockburn of Kotagherry notes that "Blackbirds seldom lay more than four eggs, the ground colour of which is a light green, with blotches and spots of a light red and brown. They generally build in thick bushes or trees, often on those the branches of which overhang streams of water. I once found a Blackbird's nest built in a bank just in a place a Robin would have chosen. The nest was quite exposed to view, and I frequently saw one of the birds sitting in the nest, while I rode past. This was quite unlike their general ideas of seclusion. The young brood came to an untimely end. They lay from April to July."

The eggs are very similar to many varieties of those of the European Blackbird. In shape they are commonly a broad oval, pointed towards one end; but, as in the case of our English favorite, the eggs are sometimes elongated and often perfectly oval, the smaller end being rounded and obtuse. The ground colour varies somewhat, being sometimes of a beautiful bright blue-green, at others of a dull olive-green, and various intermediate shades occur. They are richly speckled, mottled, and streaked, and at times even boldly blotched with brighter and duller, deeper and lighter shades of brownish-red, not unfrequently underlaid by faint spots and clouds of purplish-pink or grey. The markings vary a good deal in extent and frequency, but, in perhaps a majority of the eggs, form a more or less conspicuous and confluent cap at the large end. In some eggs all the markings are very fine and minute, laid on, as it were, with a very fine-pointed brush; in others they are coarse and streaky, and occasionally bold, blotchy, and well defined. Specimens occur which could scarcely be separated from varieties of the English Ring-ouzel's egg. The eggs have usually a slight gloss, and some specimens are highly glossy. As already mentioned, in some specimens secondary markings, small purple clouds and spots, appear to underlie the red-brown blotches.

In length the eggs vary from 1·1 to 1·3 in., and in breadth from 0·82 to 0·93 in., but the average of thirty-five eggs measured was 1·17 nearly by 0·86 in.

361.—*Merula boulboul, Lath.*

The Grey-winged Blackbird breeds throughout the outer ranges of the Himalayas, at any rate from Darjeeling to Murree, in and about the skirts of forests, from an elevation of say 4,000 to 7,000 feet. It lays from the end of April to the early part of August, but the great majority lay in May and June.

The situation of the nest varies; it is sometimes placed on the ground, in some hollow of a massive root, or in a fallen trunk; sometimes on a ledge of rock, and sometimes in a fork of some thick tree of moderate size, at no great elevation from the ground.

The nests of this species closely resemble those of the Nilghiri Blackbird. There is the same internal wattle-and-dab framework, the same massive external coating of moss and delicate ferns, and the same soft internal lining, in the case of this species, most commonly of fine dry grass. The specimens before me are fully 7½ inches in external diameter, beautiful masses of moss, lichen and dry feathery fern, standing something like 5 inches high, with deep egg cavities, 3½ inches across by 2½ in depth. As far as I can judge *M. boulboul* employs less mud in the construction of its nest than the southern allied species, but their general appearance is very similar, though the Himalayan nests seem to be generally rather the lightest, although the largest.

Four is the normal number of the eggs, but I have taken five.

From Nipal Mr. Hodgson notes that he "found a nest on the 6th June at Jaha-powah containing three fresh eggs; a dull *verditer* green, much obscured by reddish-brown freckles. The nest measured externally 6 inches in diameter, and 2·6 inches in height; the cavity was 1·5 inch in diameter and 1·6 inch in depth. The nest was in a wood, on a thick stump of a cut tree about 2 feet high, and completely hidden by the new shoots springing up from the stump. The nest was entirely composed of moss, firm and compact, and lined with hair-like fibres."

Mr. Gammie says: "I took a nest of this species out of a large tree within reach of the ground at an elevation of about 4,000 feet on the Government Chinchona plantations, Sikhim. This was on the 20th May, and the nest contained three fresh eggs. The nest was a very beautiful, finely woven, cup, composed entirely of fine roots, but with a little green moss and a few dead leaves intermingled externally. No mud at all had been used in the construction of the nest. The cavity measured 3·5 inches in diameter and over 2 inches in depth, and was nowhere above an inch in thickness. The eggs were of the usual type: a delicate sea-green ground richly blotched and streaked with red and brownish-red, and with a little pale purple intermingled at the larger end, where, also, the markings are most dense, in fact almost confluent."

Mr. Brooks, writing to me on 29th August 1868, mentioned that "before he left, Horne sent me two eggs of *Merula boulboul*. They measure 1·33 by ·9 inch and 1·22 by ·91 inch; ground colour pale greenish, very thickly speckled and mottled all over (almost hiding the ground colour) with brownish-red; the markings quit confluent and darker on the large end. These two eggs are the richest coloured Thrushes' eggs I have ever seen. These eggs were taken at Binsar 12 miles from Almorah, on the 8th August. I never found the nest, but Horne found several, the earliest in April. Indeed I myself shot a full-sized young one in June. Horne told me that the nest was sometimes placed on a rock side, Ring-ouzel-fashion, and sometimes in low trees, and was composed principally of moss and lined with grasses."

From Mahasoo, near Simla, it is recorded, I think, by Mr. E. C. Buck: "June 30th. Nest on a branch of a pollard holly, 12 feet from the ground, in fork between branch and trunk, constructed externally of moss and lichen, internally lined with strong dry grass and with a layer of mud below, between external and internal layers. Eggs half-set."

Captain C. H. T. Marshall tells us that this bird "breeds all over the Murree Hills, from middle of April till July."

In their style of colouring, the eggs most recal those of *Geocichla unicolor*, and are very different from those of the Nilghiri Blackbird. The ground colour where visible, is a pale dingy green, but is at all times thickly streaked, mottled, and clouded with dull brownish red, and in some eggs so closely as to entirely obscure the ground colour. One egg before me is an almost uniform dull red, here and there mottled slightly paler. In another egg a good deal of the ground colour shows through, except at the large end, where the markings form a confluent irregular cap. The eggs are slightly glossy and differ little in size from those of the European and Nilghiri Blackbird, but they appear to be less commonly pointed and more commonly obtuse ovals than those of either of these species.

In length they vary from 1·1 to 1·33 inch. and in breadth from 0·83 to 0·92 inch.

363.—*Merula castanea, Gould.*

Very little is known of the breeding of the Grey-headed Ouzel and the question of its identity with, or distinctness from, *M. albocincta* is yet unsolved. A nest containing five eggs was taken on the 20th April near Kotegurh, and sent me with both parents, both *castanea* ; Captain C. H. T. Marshall took a nest at Murree and sent me both parents, both also in the chestnut garb. From this it might be inferred that the two species were distinct, but many birds breed before attaining their final plumage ; and I have moreover a complete series of specimens, apparently, perfectly connecting the two forms, and Colonel Tytler averred that he had seen old *albocincta* feeding young *castanea*.

The Kotegurh nest was placed in a bank, was 6 inches in diameter and 4 in height, composed of moss, with a good deal of dead fern in the base of the nest, and only a little earth, and lined with fine grass. The cavity was about 3·5 inches in diameter, and 2·75 inches in depth.

From Murree Captain C. H. T. Marshall writes : "Two nests in banks, in the beginning of June ; eggs very similar to those of *M. boulboul*, but somewhat larger, being 1·25 by ·8 inch. Captain Cock got two nests in the Sindh Valley, Kashmir. It is peculiar that this species always breeds in banks. All the meruline birds breed about 5,000 to 7,000 feet up.

"I believe some people say that *Merula albocincta* and *M. castanea* are identical. I therefore send a pair of birds of the latter, shot off the nest in full breeding plumage, which may elucidate the matter. They must have two hatches in the year, as on the 20th April I got a nest with four eggs just ready to hatch, which must have been laid at the end of March. The nest, too, was at an elevation of nearly 7,000 feet."

The eggs of this species appear to vary very much. What I take to be the typical egg is a somewhat lengthened, at times more or less pyriform, oval. A pale green ground, with very little gloss, thickly and boldly mottled and freckled all over with brownish-red and pinkish-purple. In another type nowhere is more than a pin's point of the ground colour visible, the whole surface being, excessively minutely, freckled and speckled with brownish-red, underlaid by faint reddish purple clouds and stains.

In length they vary from 1·1 to 1·35 inch, and in breadth from 0·75 to 0·88 inch. Only eight eggs measured, five from Kotegurh, three from Sonamurgh taken by Captain Cock.

368.—*Turdus Hodgsoni, Lafr.*

I as yet only know of the Indian Missel Thrush breeding in the valleys of the Beas and Sutlej, at elevations of from 6,000 to 8,000 feet. I have only taken one nest myself, but have had several sent me, and I find by my notes that the earliest was taken on the 6th April, the latest on the 22nd of June. The nests are large, deep cups, very like those of the Blackbirds, always placed, as far as my experience and information goes, in forks of trees, at no great elevation from the ground. The core is composed of clay and grass stems, founded on a lot of dry leaves, fern, &c.; externally, there is a very thick coating of moss, grass, and lichen, while internally there is a thick lining of soft grass. The nest I obtained above Juggut Sook, in the valley of the Beas, measured *in situ* 8 inches in diameter and nearly 6 inches in height externally. The cavity was 4 inches in diameter and nearly 3 deep.

It is very doubtful whether this bird ought to be specifically separated from the European Missel Thrush.

The eggs of the Indian bird, which I have now repeatedly received from near Kotegurh and higher up in the valley of the Sutlej, bear a most striking resemblance to those of the European Missel Thrush. They are moderately broad ovals, somewhat obtuse at both ends, and exhibit but little gloss. The ground colour varies from pale pink to a pale greenish-grey, or even very pale green, and they are moderately thickly speckled and spotted (most densely, as a rule, towards the larger end) with primary markings of brownish-red and secondary ones of pale purplish-pink, which often seem to underlie the surface of the egg. In some cases the brownish-red spots are so deep and intense that they almost look as if they were black, but it is only occasional spots and never the whole body of them that assume this deep tint.

In length they vary from 1·17 to 1·26 inch, and in breadth from 0·88 to 0·93 inch, but the average of 20 eggs is 1·21 by a little more than 0·9 inch.

371.—*Oreocincla dauma, Lath.*

Captain Cock took a nest of the Small-billed Mountain Thrush at Gulmerg in Cashmere on the 6th June 1871.

The eggs are broad ovals, somewhat compressed and pointed towards the small end; they have a slight gloss, and remind one somewhat of those of the *Myiophoneus* group. The ground colour is a pale greenish white (entirely obscured in some specimens by the markings), very minutely and densely freckled and mottled with pale brownish, or in some cases reddish purple. The markings are indistinct and clouded, and in some eggs form a small ill-defined brighter patch or cap at the large end. Some eggs show the ground pretty distinctly; others, looked at from a little distance, appear to be a sort of mottled, dull, reddish buff throughout.

In length the eggs, (only three measured) varied from 1·2 to 1·26 inch, and in breadth from 0·9 to 0·93 inch.

381.—*Conostoma æmodium, Hodgs.*

A nest of the Red-billed Jay Thrush was sent me from Native Sikhim, where it was found at an elevation of about 10,000 feet, in a cluster of the small Ringal bamboo. It contained three eggs, two of which were broken in blowing them.

The nest is a very regular and perfect hemisphere, both externally and internally. It is very compactly made, externally of coarse grass and strips of bamboo leaves, and internally very thickly lined with stiff but very fine grass stems, about the thickness of an ordinary pin, very carefully curved to the shape of the nest. The coarser exterior grass appears to have been used when dry; but the fine grass, with which the interior is so densely lined, is still green. It is the most perfectly hemispherical nest I ever saw. Exteriorly it is exactly 6 inches in diameter and 3 in height; internally the cavity measures 4·5 in diameter and 2·25 in depth.

The egg is a regular moderately elongated oval, slightly compressed towards the smaller end. The shell is fine and thin, and has only a faint gloss. The ground colour is a dull white, and it is sparsely blotched, streaked, and smudged with pale yellowish-brown, besides which, about the large end, there are a number of small pale inky purple spots and clouds, looking as if they were beneath the surface of the shell.

The single egg preserved measures 1·11 by 0·8.

382.—*Grammatoptila striata, Vig.*

The Striated Jay Thrush, remarks Mr. Blyth, "builds a compact Jay-like nest. The eggs are spotless blue, as shown by one of Mr. Hodgson's drawings in the British Museum."

A nest of this species found near Darjeeling in July was placed on the branches of a large tree, at an elevation of about 12 feet.

It was a huge shallow cup, composed mainly of moss, bound together with stems of creepers and fronds of a *Selaginella*, and lined with coarse roots and broken pieces of dry grass. A few dead leaves were incorporated in the body of the nest. The nest was about 8 or 9 inches in diameter and about 2 in thickness, the broad, shallow, saucer-like cavity being about an inch in depth.

The nest contained two nearly fresh eggs. The eggs appear to be rather peculiarily shaped. They are moderately elongated ovals, a good deal pinched out and pointed towards the small end in the same manner (though in a less degree) as those of some Plovers, Snipe, &c. I do not know whether this is the typical shape of this egg, or whether it is an abnormal peculiarity of the eggs of this particular nest. The shell is fine, but the eggs have very little gloss. In colour they are a very pale spotless blue, not much darker than those of *Zosterops palpebrosus*.

The eggs measure 1·3 and 1·32 in length, and 0·89 and 0·92 in breadth.

385.—*Pyctoris sinensis, Gmel.*

The Yellow-eyed Babbler breeds throughout the plains of India, as also in the Nilghiris, to an elevation of 5,000, and in the Himalayas to perhaps

4,000, feet. It lays in the latter part of June, in July, August, and September. Gardens are the favourite localities, and in these the little bird makes its compact and solid nest, sometimes in a fork of the fine twigs of a Lime bush, sometimes in a Mangoe, Orange, or Apple tree, occasionally suspended between three stout grass stems, or even attached to a single stem of the huge grass from which the native pens are made. I have taken a nest hung between three reeds, exactly resembling in shape and position the Reed Warbler's nest (*Salicaria arundinacea*), figured in Mr. Yarrell's vignette at page 313, Vol. I, 3rd Edition.

The nest is typically cone-shaped (the apex downwards), from 5 to 6 inches in depth, and 3 or 4 in diameter at the base; but it varies of course according to situation, the cone being often broadly truncated. In the base of the cone (which is uppermost) is the egg cavity, measuring from 2 to 3 inches in diameter, and from 2 to 2·5 inches in depth. The nest is *very* compactly and solidly woven, of rather broad blades of grass, and long strips of fine fibrous bark, exteriorly more or less coated with cobwebs and gossamer threads. Interiorly, fine grass stems and roots are neatly and closely interwoven. I once found some horse-hair along with the grass roots, but this is unusual.

The full number of eggs is, I believe, five. I have repeatedly taken nests containing this number, and have comparatively seldom met with a smaller number of eggs at all incubated.

Captain G. F. L. Marshall says: "I found a nest of this species at Roorkee in the early part of July. It contained three eggs and was beautifully made, a deep cup fixed on to an artichoke stock, and at a little distance much resembled an artichoke."

Mr. E. C. Nunn, writing from near Agra on the 26th September 1867, says: "I got a *Pyctoris'* nest yesterday, suspended between two stalks of Jowar *(Holcus sorghum)*, the nest firmly bound with strips of fibrous bark, at two opposite points of its circumference, to the two stems. This is, I imagine, something out of the usual order of things with these birds. The nests which I have hitherto found have been situated in young Mangoe trees, Rose bushes, or Peach and Orange trees."

From Futtehgurh Mr. A. A. Anderson sends the following note:—

"The nest and eggs of this bird are very beautiful. A pair once built in a Pumplenose tree *(Citrus decumana)* in my garden, laying five long eggs. The nest, still in my collection, was placed in the fork of *four* small upright twigs; it was composed entirely of dry grass stems (no soft material inside), and laced outwardly, in and out of the twigs, with dry fibre belonging to the Plantain tree.

"The eggs are small for the size of the bird, and scarcely so large as those of the Hedge-sparrow."

Captain Hutton remarks: "This likewise is a Dhoon bird; its nest was found there on the 1st July, when it contained four eggs of a dull white colour, thickly speckled and blotched all over with ferruginous spots, forming also an open darker coloured ring at the large end, and intermixed with brown.

"The nest is a deep cup, placed in the trifurcation of the slender upright branch of a low shrub, and is constructed externally of coarse grass blades held together by cobwebs and seed down, the lining being fine grass seed stalks. Diameter of the top 2½ inches; depth within 2 inches; externally 3½ inches."

Mr. F. R. Blewitt tells us that "the Yellow-eyed Babbler breeds from July to September, or, I should say, up to the middle of September. Its selection of a tree for its nest is not confined to any one species, but by preference the bird selects those of small growth, and even frequently high growing brushwood. The nests are very neatly made, and what is singular is that, as regards build and shape, they are always almost exactly alike. If I have seen one, I must have seen at least fifty this year, all with the same exterior material of closely interlaced vegetable fibre over grass, and the inner lining of fine grass, deep cup-shaped, and in diameter, outer and inner, varying but little. Where it could be effected, the nest was suspended to, or rather fastened between, two forks; or where these were not available, between three twigs. The outer diameter of the nests were from 2·7 to 2·9, inner from 2·3 to 2·5. The ground colour of the eggs is, typically, white, sometimes merging into a light, very light, cream colour. The blotchings on the eggs differ very much; sometimes they are uniformly spread over the surface, at others of irregular sizes here and there; but in whatever form they may be, they are of a lighter or darker brick red. Four is the regular number of eggs, though occasionally five in one nest have been obtained."

Mr. R. M. Adam remarks: "This species builds about Agra in May, June, and July. The nest is a beautiful deep cup-shaped structure, almost always fastened to a branch of a low bush. The normal number of eggs appear to be four."

From Kotagherry, near Ootacamund, Miss Cockburn records that "this species builds a neat cup-shaped nest, generally choosing a branch consisting of three upright sprigs, at the bottom of which the building is placed. The nests (one of which is now before me) are begun with broad grass leaves, and the inside compactly lined with fine fibres of the same material: to render the whole firm, a few cobwebs are added to the outside, thus fixing the nest securely to the sprigs. These birds build in the months of June and July, and, as far as I have observed, lay only three eggs."

Mr. Philipps, quoted by Dr. Jerdon, says that this bird "*generally* builds on Banyan trees." This is clearly a mistake. I have known of the taking, or have myself taken, altogether upwards of fifty nests in the North-Western Provinces, whence Mr. Philipps was writing, and never yet heard of or saw a nest of this species on a Banyan.

The eggs vary a good deal in size and shape, and very much in colouring. They are mostly of a very broad oval shape, very obtuse at the smaller end. Some are, however, slightly pyriform, and some a little elongated. There are two very distinct types of coloration: the one is a pinkish-white ground, thickly and finely mottled and streaked over the whole surface with more or less bright and deep brick-dust red, so that the ground colour only faintly shows through, here and there, as a sort of pale mottling; in the other type the ground colour is pinkish-white, somewhat *sparingly*, but boldly, blotched with irregular patches and eccentric hieroglyphic-like streaks, often Bunting-like in their character, of bright blood or brick-dust red. The eggs of this type, besides these primary markings, generally exhibit towards the large end a number of pale inky purple blotches or clouds. There is a third type somewhat intermediate between these, in which the ground colour, instead of being finely freckled all over as in the former, or sparingly blotched as in the latter, is very coarsely mottled and clouded, as if clumsily daubed over by a child, with a red intermediate in intensity between that usually observable in the two first described types. Combinations of these different types of course occur, but fully two-thirds can be separated distinctly under the first and second varieties. Though much smaller, many of the eggs recall those of the English Robin. The eggs have often a fine gloss. I have one or two specimens so uniformly coloured that, though perhaps slightly shorter and broader in form, they might almost pass for the eggs of *Cetti's Warbler.*

In length they vary from 0·65 to 0·8, and in breadth from 0·53 to 0·68; but the average of 77 eggs measured is 0·73 by 0·59.

388.—*Alcippe nipalensis, Hodgs.*

What induces Mr. Gray to separate this species so widely from *Alcippe poiocephala,* to which it is excessively closely allied, and place it under *Siva,* I cannot imagine; and although, as a rule, following Mr. Gray in the nomenclature adopted in this volume, I am utterly unable to do so in the present instance.

The Nepal Quaker Thrush, according to Mr. Hodgson's notes, breeds from March to May, building a deep massive cup-shaped nest, firmly fastened between two or three upright shoots, and laying three or four eggs, which are figured as measuring 0·7 by 0·55. He has the following note:

"*Valley, April 1st.*—A pair and nest. Nest is round, 4 inches deep on the outside and 2 inches within, and the same wide, being of the usual soup-basin shape and open at the top, made of dry leaves bound together with hair-like grass fibres and moss roots, which also form the lining, further compacted by spiders' webs, which, being also twisted round three adjacent twigs, form the suspenders of the nest, the bottom of which does not rest upon anything; attached to a low bush 1½ feet from the ground. The nest contained three eggs of a pinkish-white ground thickly spotted with chesnut, the spots being almost entirely confluent at the large end."

Dr. Jerdon says: "I had the nest and eggs brought me by the Lepchas. The nest was loosely made with grass and bamboo leaves, and the eggs were white with a few reddish-brown spots."

A nest of this species was found near Darjeeling in July, at an elevation of between 3,000 and 4,000 feet. It was situated in a small bush, in low brushwood, and placed only about 2 feet from the ground. The nest is a compactly made and moderately deep cup. The exterior portion of the nest is composed of bamboo leaves, more or less held in their places by fine horsehair-like black roots, with which also the cavity is very thickly and neatly lined. Exteriorly the nest is about 3·75 inches in diameter and nearly 3 in height. The cavity is 2·25 in diameter and 1·6 in depth.

The nest contained three nearly fresh eggs. The eggs are moderately elongated ovals, very regular and slightly pointed towards the small end. The shell is fine and exhibits a slight gloss. The ground colour is white or pinkish-white, and they are *very* minutely speckled all over with purplish-red. The specklings exhibit a decided tendency to form a more or less perfect, and more or less confluent, cap or zone at the large end.

Two of the eggs measure 0·72 and 0·71 in length, and 0·54 and 0·52 in breadth.

389.—*Alcippe poiocephala, Jerd.*

The Nilghiri Quaker Thrush (which, I may note, is identical, as I long since pointed out, and as Mr. Bruce himself now agrees, with the Mahableshwar

A. Brucei, Blanford) breeds, apparently, throughout the hilly regions of Southern India. It lays from January to June. A nest taken near Neddivattam by Mr. Davison on the 5th April was placed between the fork of three twigs of a bush, at the height of 5 or 6 feet from the ground. It was a deep cup, massive enough but very loosely put together, and composed of green moss, dead leaves, a little grass, and moss roots. It was entirely lined with rather coarse black moss roots. In shape it was nearly an inverted cone, some 3½ inches in diameter at top and fully 5 inches in height. The cavity was over 2 inches in diameter and nearly 2 inches in depth. A few cobwebs are here and there intermingled in the external surface, but the grass roots appear to have been chiefly relied on for holding the nest together.

Another nest found by Miss Cockburn on the 5th June on a small bush, about 7 or 8 feet in height, standing on the banks of a stream, was somewhat different. It was placed in the midst of a clump of leaves, at the tips of three or four little twigs, between which the nest was partly suspended and partly wedged in. It was composed of fine grass stems, with a few grass and moss roots as a lining interiorly, and with several dead leaves and a good deal of wool incorporated in the outer surface, the greater portion of which, however, was concealed by the leaves of the twigs amongst which it was built. It was only about 3½ inches in diameter, and the egg cavity was less than 2½ inches across and not above 1½ inch in depth.

Mr. Davison says: "This bird breeds on the slopes of the Nilghiris in the latter end of March and April. The nest is uncommonly like that of *Trochalopteron cachinnans*, but is of course smaller; it is deep and cup-shaped, composed externally of moss and dead leaves, and is lined with moss and fern roots. It is always (as far as I have observed) fastened to a thin branch about 6 feet from the ground. All the nests I have ever observed were on small trees in the shadiest parts of the jungle, far in, and never near, the edge of the jungle or in the open. The eggs are very handsome, and are, I think, one of the prettiest of the eggs to be found on the Nilghiris and their slopes. The ground colour is of a beautiful reddish-pink (especially when fresh), blotched and streaked with purplish-carmine."

As in the case of *Pyctoris sinensis*, the eggs differ much in colour and markings. Two eggs of this species sent me by Miss Cockburn from Kotagherry are moderately broad ovals, very obtuse at the larger end and somewhat compressed towards the smaller. The shell is fine and somewhat glossy. The ground colour is white or pinkish-white, and they are thickly mottled and freckled most thickly at the larger end, where the markings form a more or less confluent mottled cap, with two shades of pinkish-, and in some spots slightly brownish-, red, and towards the large end, where the markings are dense, traces of pale purple clouds underlying the primary markings are observable. In general appearance these eggs not a little resemble those of some of the *Bulbuls*, and it seems difficult to believe that they are eggs of birds of the same genus as *Alcippe atriceps*, the eggs of which are so much smaller and of such a totally different type. Two eggs of the same species taken by Mr. Davison are moderately broad ovals, somewhat compressed towards one end; have a fine and slightly glossy shell. The ground colour is a delicate pink. There are a few pretty large and conspicuous spots and hair lines of deep brownish red, almost black, and there are a few large pinkish-brown smears and clouds, generally lying round or about the dark spots; and then towards the large end there are several small clouds and patches of faint inky purple, which appear to underlie the other markings. The character of the markings on some of these eggs reminds one strongly of those of the Chaffinch. Other eggs taken later by Miss Cockburn at Kotagherry on the 21st January are just intermediate between the two types above described.

All the eggs are very nearly the same size, and only vary in length from 0·83 to 0·86, and in breadth from 0·6 to 0·65.

390.—*Alcippe atriceps, Jerd.*

Writing from Coonoor in the Nilghiris Mr. Wait tells me that the Black-headed Quaker Thrush breeds in his neighbourhood in June and July: "It builds in weeds and grass beside the banks of old roads, at elevations of from 5,000 to 5,500 feet. The nest is placed at a height of from a foot to 2 feet from the ground, is domed and loosely built, composed almost entirely of dry blades of the Lemon grass, and lined with the same or a few softer grass blades. In shape it is more or less ovate, the longer axis vertical, and the external diameters from 4 to 8 inches. They lay two or three rather broad oval eggs, which have a white ground, speckled and spotted chiefly at the large end with reddish-brown."

Miss Cockburn sends me a nest of this species which she found on the 17th June amongst reeds on the edge of a stream, about 2 or 3 feet above the water's edge. It appears to have been a globular mass very loosely put together, of broad reed leaves, between 3 or 4 inches in diameter, and with a central unlined cavity.

An egg sent me from Coonoor by Mr. Wait is a moderately broad, very regular, oval, only slightly compressed towards the lower end. The shell is very fine and satiny, but has only a slight gloss. The ground colour is white or slightly greyish-white, and towards the large end it is profusely speckled with minute dots of brownish and purplish red, a few specks of the same colour being scattered about the rest of the surface of the eggs.

Another egg sent me from Kotagherry by Miss Cockburn exactly corresponds with the above description.

Both are precisely the same size, and measure 0·75 by 0·55.

391.—*Stachyris nigriceps, Hodgs.*

I have never taken a nest of this species, the Black-throated Wren Babbler as Jerdon calls it, but Mr. Gammie, a careful observer, in whose neighbourhood (Rungbee, near Darjeeling) this bird is very abundant, has taken many nests, two of which he has sent me, with many eggs.

One nest found at Rishap, on the 14th May, at an elevation of about 4,000 feet, contained four nearly fresh eggs. It was a very loose structure, a shallow cup of about 3½ inches in diameter, composed of fine grass stems without any lining, and coated externally with broad coarse grass blades.

Another nest taken low down in the valley, at about an elevation of 2,000 feet, on the 17th June contained three fresh eggs. It was placed in a bank at the root of a shrub. Like the previous one, it was a loose but rather deeper cup, interiorly composed of moderately fine grass, exteriorly of dead leaves

The egg cavity measured about 2 inches in diameter and 1½ inch in depth. *In situ,* both probably were more or less domed, the cups more or less overhung by a hood or canopy.

Mr. Gammie remarks: "I have seen numerous nests of this species in former years and have found two this season, but have never seen eggs with 'faint darker spots' as mentioned by Jerdon. Hodgson's description is quite correct. The eggs are a 'pale fawn colour' *before they are blown,* the shells being so translucent that the yolk shows through partially. The shell is pure white in itself. The cavity of the cup-shaped part of one nest beside me is 2 inches deep by 2 inches wide; outer dimensions 5¾ inches deep (from top of hood) by 4 inches wide across the face of entrance. It is loosely though neatly made of bamboo leaves and fern lined with dry grass. The bird breeds in May and June and lays four or five eggs."

Mr. Eugene Oates tells us that he "procured only one specimen of this bird, and that in the evergreen forests of the Pegu Hills. I shot it off the nest on the 29th April. The nest was on a bank of a nullah well concealed among dead leaves, about 2 feet above the bottom of the bank. The nest is domed, about 7 inches in height and 5 inches in diameter externally, with the entrance at the side near the top. The outside is a mass of bamboo leaves very loose being in no way bound together; each leaf is curled to the shape of the nest. The inside, a thin lining only of vegetable fibres. There were three eggs, just on the point of hatching; colour, pure white."

The Black-throated Wren Babbler breeds, according to Mr. Hodgson, in April and May, and builds a large deep cup-shaped nest, either upon the ground in the midst of grass, or at a short distance above the ground between five or six thin twigs; a nest which he measured was externally 4·5 in diameter and 3·5 in height, while the cavity was 2·5 in diameter and 2 in depth. The nest is composed of dry bamboo and other leaves wound together with grass and moss-roots, and lined with these, and is a very firm compact structure considering the materials. They lay four or five eggs, which are figured as very regular rather broad ovals, of a nearly uniform, very pale *café-au-lait* colour (these were the *unblown* eggs), measuring about 0·75 by 0·58.

Dr. Jerdon remarks: "A nest and eggs were brought to me at Darjeeling, and said to be of this species. The nest was rather large, very loosely made of bamboo leaves and fibres, and the eggs were of a pale salmon colour, with some faint darker spots."

There is no doubt that these must have been the eggs of some other species.

The eggs are broad ovals, somewhat compressed towards one end, in some cases slightly pyriform. They are pure white, spotless, and fairly glossy.

They vary from 0·73 to 0·84 in length, and from 0·56 to 0·61 in breadth.

The average of a dozen eggs is very nearly 0·77 by 0·6.

392.—*Stachyris pyrops, Hodgs.*

Accounts differ somewhat as to the eggs of the Red-billed Wren Babbler.

From Murree Captain C. H. T. Marshall writes: "Nest found in low ground, about 100 yards from the River Jheelum, situated in a low bush externally composed of broad dry reed leaves, and interiorly of fine grass, cup-shaped. Eggs, four in number, long oval, white, with a few reddish specks at the larger end. Length ·7, breadth ·5. Lays in the latter end of June, 4,000 feet up."

The nest, which he kindly sent me, is a deep cup, coarsely made interiorly of grass stems, externally of broad blades of grass, in which a few dead leaves are incorporated; there is no lining. Exteriorly the nest is about 3·5 in diameter, and about 3 inches in depth; the egg cavity is a little more than 2 inches in diameter, and fully 1·75 in depth.

Mr. Hodgson "found the nest" of this in Nepal, "at an elevation of about 6,000 feet, in shrubby upland." It was "placed in a small shrub about 2 feet from the ground." It was "a very deep cup, about 4 inches in length, and 2·5 in diameter externally, placed obliquely endwise upon cross stems of the shrub, and opening, as it were obliquely, upwards at one end," the cavity being about 1·5 in diameter. The nest was made of "dry leaves and grass pretty compactly woven." The nest "contained four eggs," which are described as "whitish, with spare and faint fawn-coloured spots," and are figured as measuring 0·65 by 0·47·

Captain Hutton says: "This is a common species both in the Dhoon and in the hills, and may be found at all seasons, making known its presence among the brushwood by the utterance of a clear and musical note like the ringing of a tiny bell. In the winter time it is often mixed up with flocks composed of *Siva strigula* and *Leiothrix luteus*, creeping among the bushes like the *Pari* and *Phylloscopi*. It constructs its nest at the base of bushes, the eggs being three in number, of a faint greenish-grey, thickly irrorated with small reddish-brown specks. The nest is composed of dry grass blades externally, within which is a layer of fine woody stalks and fibres, and lined with black hair. It is cup-shaped, and placed upon a thick bed of dried leaves, which are most probably accumulated beneath the bush by the wind. One nest was taken at Dehra, in a garden, on the 30th July, and others at Mussoorie about the same time."

Captain Hutton sent me three eggs, beautiful little ovals, slightly pointed towards one end, of a delicate pale greenish ground, thickly speckled all over with purplish-red, but by far most densely so towards the large end, where they form an imperfect speckled cap. The eggs are fairly glossy. These eggs very closely resemble (though they are much smaller) those of *Suya atrogularis*.

These eggs vary from 0·58 to 0·6 in length, and from 0·44 to 0·46 in breadth.

393.—*Stachyris ruficeps, Blyth.*

The Red-headed Wren Babbler breeds, according to Mr. Hodgson, from April to June, building a large massive cup-shaped nest amongst bamboos, as a rule, at heights of from 7 to 10 feet from the ground. The nest is wedged in between half-a-dozen or more creepers and shoots, and is composed almost exclusively of dry bamboo leaves neatly, but rather loosely, interwoven, and lined also with these leaves. One which he measured was rather oval in shape, 5·25 in diameter one way, by 4 inches the other, and 3·6 in height. The leaves used in the rim of the cup were projected a little inwards, so as to make the mouth of the cavity a little smaller than the diameter of this latter within. The diameter of the mouth was 2 inches, that of the cavity 2·5, and the latter is about 1·5 deep. Four eggs are laid, a sort of brownish-white, speckled and spotted with brown or reddish-brown. The egg figured measures 0·7 by 0·52, and is a moderately broad, regular oval.

Dr. Jerdon says: "A nest and eggs, said to be of this species, were brought to me at Darjeeling. The nest was a loose structure of grass and fibres, and contained two eggs of a greenish-white colour with some rusty spots."

394.—*Stachyris chrysæa, Hodgs.*

Mr. Blyth remarks: "The egg, as figured by Mr. Hodgson, is pinkish-white, and the nest domed and placed on the summit of a sedge. *S. præcognitus* lays a blue egg—(*Ibis* 1866, p. 309)."

There is no figure of either the nest or eggs of the Golden Wren Babbler amongst the drawings of Mr. Hodgson that I possess.

395.—*Mixornis rubricapilla, Tick.*

This, though said to occur also in Central India, is a purely Indo-Burmese form, found chiefly in the Eastern sub-Himalayan jungles, Assam, Cachar, Burmah, and Tenasserim.

It is only from this latter province that I have any information as to the nidification of the Yellow-breasted Wren Warbler.

Mr. Davison writes to me: "At a small village, called Shymootee or Tsinmokehtee, about 7 miles from the town of Tavoy, and very slightly above the sea level, say 50 feet, I found on the 6th of May 1874 a nest of this species. The nest was placed in a dense clump of a very thorny plant (somewhat like a Pine-apple bush) about a foot from the ground; it was not particularly well concealed. The nest was built of bamboo leaves, and in general appearance was not at all unlike that of *Ochromela nigrorufa*; but the egg cavity was very shallow, so that by moving aside an overhanging leaf the eggs were distinctly visible. There were three partially incubated eggs in the nest, a somewhat dull white, spotted with pinkish dots."

The nest is more or less egg-shaped, the longer axis vertical, with a circular aperture on one side near the top.

The exterior diameters are 5 and nearly 4. The aperture about 1·5 in diameter. The cavity is barely 2 inches in diameter, and only 1·25 deep below the lower edge of the entrance.

Both nest and eggs strongly recall those of *Dumetia hyperythra*. The former is composed of the broad, grass-like, leaves of the bamboo, and with only a few stems of grass here and there intermingled as if by accident. In the sides of the cavity the leaf blades are so neatly laid together, side by side, that the interior seems as if planked, and at the bottom of the cavity there is a very scanty lining of very fine grass stems.

The eggs are regular ovals, moderately elongated, only very slightly compressed towards the smaller end, which is only just appreciably smaller.

The shell is very fine and delicate, excessively smooth and fragile, but with only a faint gloss. The ground is a dead white, with perhaps the least possible pinkish tinge. The markings consist of *tiny* specks of brownish or purplish red and pale yellowish-brown, thinly scattered over the rest of the surface, but comparatively densely clustered round the larger end, where they form a rather conspicuous though irregular and imperfect zone, apparent enough in all, but much more strongly marked in one egg than in the others.

The eggs vary in length from 0·65 to 0·71, and in breadth from 0·5 to 0·51.

396.—*Timalia pileata, Horsf.*

Mr. Eugene Oates records that he "found the nest at Thayetmyo on the 2nd June with young ones a few days old. The nest was placed on the ground in the centre of a low but very thick thorny bush."

Lord Walden separates our Indian bird as *T. Jerdoni,* I am unable as yet to confirm the distinctness of the *Javan* and *Indian* races of this species.

397.—*Dumetia hyperythra, Frankl.*

The Rufous-bellied Babbler breeds throughout the Central Provinces, Chota Nagpoor, Upper Bengal, the eastern portions of the North-West Provinces, parts of Oudh, and even in the low valleys of Kumaon.

It lays from the middle of June to the middle of August, building a globular nest of broad grass blades or bamboo leaves some 4 or 5 inches in diameter, sparingly lined with fine grass roots or a little hair, or sometimes entirely unlined. The nest is placed sometimes on the ground amongst dead leaves, some of which are not unfrequently incorporated in the structure; sometimes in coarse grass or some little shrub a foot or two from the ground, but by preference, according to my experience, in amongst the roots of a bamboo clump.

Four is the usual number of eggs laid.

Mr. Brooks writes: "On the 26th June 1867, in the broken ground above Chunar, I took two nests in the foot of a thick bamboo bush about 2 feet from the ground. The nests were made of bamboo leaves rolled into a ball with the entrance at the side, and no lining except a few hairs. There were two eggs in one nest and three in the other. They were all fresh. The eggs in the two nests varied somewhat: the ground of the one was nearly pure white, and it was finely speckled with reddish-brown, which at the large end was partly confluent: the other nest had the eggs with a pinkish-white ground, the spots larger and less neatly defined, and with a rather large confluent spot at the large end."

Writing from Hoshungabad Mr. E. C. Nunn remarks: "I found two nests of this species, each containing two eggs, on the 20th July and 6th August 1868. Both nests were ball-shaped, of coarse grass very firmly and compactly twisted together, and with numerous dead leaves, incorporated in the body of the nest and towards the base, forming the major portion of the material. They were thinly lined inside with fine grass roots. One was placed at the root of a small thorny bush: the other on the ground in a thick clump of rank grass." The nest Mr. Nunn sent to me was peculiarly solidly made. The cavity was small, about 2·25 inches in depth and 1·5 in diameter. The bottom of the nest was some 2 inches and the sides 1·25 inch thick.

From Raipoor Mr. F. R. Blewitt tells us that "in July and August four nests of this Babbler were taken; in two there were four eggs each, in the third, three, and in the fourth, two—thirteen in all. The nests were carefully made on the ground, at the base of clumps of long grass growing very near to bamboo thickets. Three are made exclusively of the dry leaves of the bamboo; the fourth of coarse grass. They were nearly globular, about 4 inches in diameter, and without any regular lining, although in the interior of the cavity a good deal of fine grass stems had been incorporated in the nest. They were well hidden in the grass."

The eggs are short, broad ovals, very slightly compressed towards one end. The ground colour is white or pinkish-white, and it is streaked, spotted, and speckled most thickly at the large end (where there is a tendency to form an irregular confluent cap or zone), and thinly towards the small end, with shades of red, brownish-red, and reddish-purple, varying much in different examples. In some the markings are pretty bold and blotchy, in others they are small and speckly; in some they are smudgy and ill-defined, in others they are clear and distinct. Some of the eggs are minitures of some types of *Pyctoris sinensis,* but many recall the eggs of the *Tit-mouse.* They are much about the size of those of *Parus cæruleus* and *palustris,* but a trifle less broad than either of these. The eggs have a faint gloss.

In length they vary from 0·63 to 0·7, and in breadth from 0·5 to 0·56; but the average of twenty-four eggs now before me is 0·67 by 0·53.

398.—*Dumetia albogularis, Blyth.*

Miss M. B. Cockburn, writing from Kotagherry, tells me that "the White-throated Wren Babbler builds its nest in the month of June. One was found by my nest-seekers on the 17th of that month in the year 1873. It was constructed on a coffee tree, and contained three eggs, which were white, profusely covered with reddish spots of all sizes. The bird was very shy, and would not return to the nest for some hours after it had been discovered; when however she did so, she was shot. This year (1874) I found another similar nest on the 9th of June, also containing three eggs."

The nest with which she kindly favoured me was small and nearly globular, (say at most 4 inches in external diameter,) composed entirely of broad flaggy grass without any lining or any admixture whatsoever of other material. The nest was loosely put together, and had a comparatively narrow circular entrance near the top.

In shape the eggs are moderately elongated ovals. The shell is very fine and smooth, and has, in some a rather bright, in some only a very slight gloss. The ground is a China white. The markings consist of a profusion of specks and spots of a very bright red, which, though spread over the whole surface, are gathered most densely into an imperfect, more or less confluent, cap or zone at the larger end, where also a few purplish-grey spots and specks, not usually found on any other part of the egg, are noticeable.

In length the six eggs that I possess vary from 0·7 to 0·75, and in breadth from 0·5 to 0·53.

399.—*Pellorneum ruficeps, Swains.*

Writing from Kotagherry Miss Cockburn says: "Spotted Wren Babblers are exceedingly shy. They associate in small flocks, except during the breeding season, when they go about in pairs. I have only known them to frequent small woods, and brushwood, a little higher than the elevation of the coffee plantations.

"Three nests of these birds were found in the months of March and April 1871. The first was placed on the ground, close against a bush. The nest, consisting of dry leaves and grass, appeared to be merely a canopy for the eggs, which were almost on the bare ground, having only a *very few* pieces of straw under them. The eggs were three in number and covered profusely with innumerable small dark spots, making it difficult to say what the ground colour really was. The nest was not easily found. The bird left it so quietly as not to be heard, and dropped down the hill like a ball. When the eggs were discovered the bird did not return to them for fully three hours, after which she came very cautiously, but only to meet her doom, poor thing, as she was then shot. The second nest was built in the same way under a bush, and contained three eggs, which were put into my egg-box lined with cotton, but were hatched on the way home. The third nest was constructed under a large stone and with the same materials, and contained two young ones."

An egg of this species, received from Miss Cockburn, is a moderately broad and very regular oval. The ground colour is a slightly greenish-white, and the whole surface of the egg is excessively finely freckled and speckled with lilac or pale purplish-grey and a more or less rufous brown. The egg has a slight gloss.

It measures 0·88 by 0·65.

399 *bis.—Pellorneum nipalensis, Hodgs.*

This species, originally described by Hodgson as *Hemipteron nipalensis,* was confounded by Gray and others with *P. ruficeps,* Swainson, and subsequently rediscriminated and described by Blanford as *P. Mandellii.*

The Nepalese Spotted Wren Babbler, according to Mr. Hodgson's notes, begins to lay in April, the young being ready to fly in July. They build a large, more or less oval, globular nest, laid lengthwise on the ground in some bush or clump of rush or reed, composed of moss, dry leaves, and vegetable fibres, and lined with moss roots. The entrance, which is circular, is at one end. A nest measured by Mr. Hodgson was 6·75 in length and 5 inches in height. The aperture, at one end of the egg-shaped nest, was about 2 inches in diameter, and the cavity was about 2·5 in diameter and nearly 4 inches deep. The eggs are three or four in number, and are figured as broad ovals pointed towards the small end, measuring about 0·86 by 0·65, and having a greyish-white ground, thickly speckled and spotted with more or less bright, red or brownish-red, and most thickly so at the large end, where the markings are nearly confluent.

A nest said to belong to this species, and found near Darjeeling in July, at an elevation of about 4,000 feet, was placed on the ground on the side of a bank—a very dirty untidy nest, more or less cylindrical in shape, composed of dead leaves, including a good many of those of the bamboo, dead twigs, and old roots, and very sparsely lined with black moss roots. The nest is about 4 inches in diameter externally, and the cavity about 2·5 in diameter.

It contained three fresh eggs, very regular, moderately broad ovals; the shell fine and compact, with a slight gloss. The ground colour is white, and the egg everywhere very finely speckled with chocolate or purplish-brown, the markings being much most dense at the large end, where they form a more or less irregular, and more or less conspicuous, speckly cap.

Two eggs measure 0·86 and 0·9 in length, and 0·65 and 0·66 in breadth.

400.—*Pomatorhinus ruficollis, Hodgs.*

The Rufous-necked Scimitar Babbler breeds in Nepal, the Himalayas eastward of that State, and in the various ranges running down from Assam to Burmah.

The breeding season appears to be April and May. They lay five, or sometimes only four, eggs.

From Sikhim Mr. Gammie writes: "This species breeds, I think, from the middle of April to the middle of May; but I have only as yet taken a single nest, and this I found at Rishap on the 5th May, at an elevation of about 4,500 feet. The nest was placed on the ground in open country, but partially concealed by overhanging grass and weeds, and immediately adjoining a deep humid ravine filled with a dense under-growth. The nest was composed of dry grass, fern, bamboo, and other dry leaves put loosely together and lined with a few fibres. In shape it was domed or hooded, and exteriorly it measured 5·7 in height and 5 inches in diameter. Interiorly the cavity was 2·6 in diameter, and had a total depth of 3·8 measured from the roof, but of only 2 inches below the lower margin of the aperture. This nest contained five eggs, much incubated; indeed, they would have hatched off in one or two days."

The Rufous-necked Scimitar Babbler breeds, according to Mr. Hodgson, in the central portion of Nepal in April and May, building a large, coarse, globular nest of dry grass and bamboo leaves on the ground in some thick bush or bamboo clump. The opening of the nest is at the side. They lay four or five white eggs, measuring as figured 0·9 by 0·68.

The eggs sent me by Mr. Gammie are rather elongated ovals, a good deal pointed towards one end, pure white, the shells very fine and fragile, and with a fair amount of gloss.

They vary in length from 0·98 to 1·02, and in breadth from 0·67 to 0·74; but the eggs of all these Babblers vary much in size and shape, and a large series is necessary to enable a fair average to be struck.

401.—*Pomatorhinus ferruginosus, Blyth.*

The Coral-billed Scimitar Babbler, according to Mr. Hodgson's notes, breeds in Sikhim, at an elevation of 5,000 or 6,000 feet. Its nest is placed about a foot or 2 feet above the ground, in a bamboo clump or some thick bush, and is firmly wedged in between the twigs and shoots. It is composed internally of dried bamboo leaves, grass, and vegetable fibres, outside which bamboo sheaths are bound on with creepers and fibres of different kinds. The nest is more or less egg-shaped, with the longer diameter horizontal, some 7 inches or so in length and 5 inches in height, and with the entrance at one end, measuring some 3 inches in diameter. Four or five eggs are laid, elongated ovals, somewhat pointed towards the small end, pure white, and measuring about 1·08 by 0·7.

402.—*Pomatorhinus schisticeps, Hodgs.*

Speaking of the Slaty-headed Scimitar Babbler Dr. Jerdon says: "A nest made of moss and some fibres, and with four pure white eggs, was brought to me at Darjeeling as belonging to this bird."

404.—*Pomatorhinus Horsfieldii, Sykes.*

The Southern Scimitar Babbler breeds throughout the hilly tracts of Southern India, up to an elevation of fully 7,000 feet. They are common in Ootacamund, and even on Dodabet as high up as it is wooded. They seem to breed less plentifully about Kotagherry than they do at Ootacamund itself, Coonoor, Neddivattam, &c.

They lay from February to May, building a largish globular nest of grass, moss, and roots, placed on or very near to the ground in some bush or clump of fern or grass. They lay five eggs.

A nest of this species which I owe to Mr. Carter, and which was found at Coonoor on the 7th April 1869, is a huge globular mass of moss and fine moss roots some 7 inches in diameter, with, on the upper side, an entrance to a small egg cavity some 3½ inches in circumference and 2 inches in depth. It is a most singular nest, a great compact ball of soft feathery moss and very fine moss roots, which latter predominate in the interior of the cavity and so form a sort of lining to it. The great body of the nest is below the cavity, the overhanging dome-like covering of the cavity being comparatively thin.

Mr. Davison remarks: "The nest of this bird is very peculiar in structure, more like the nest of a field mouse than of a bird, being in fact merely a ball of grass rather loosely put together, the grass on the exterior being intermingled with dry leaves and other rubbish. The nest is generally placed either in a clump of fern, or at the roots of some grass-grown bush. The eggs are pure white, very elongated, and with a remarkably thin and delicate shell. The normal number appears to be five. The breeding season is, I think, the latter end of April and May."

Writing of this species Dr. Jerdon says: "I procured its nest near Neddivattam on the Nilghiris, on a bank on the road-side, made with moss and roots, and containing four white eggs of a very elongated form."

Miss Cockburn, of Kotagherry, furnishes me with the following note on the nidification of this species:—

"These birds build rather large nests, among the *roots* of bushes, and generally prefer those which grow on the slopes of steep hills. Their nests are composed of coarse grass, a few roots of the same, and the bark of a bush, which cracks when dry and is very easily pulled off. These materials are put together into a round nest, and also form a covering above, which makes the inside look very snug indeed. But if any attempts are made to remove the nest, it generally falls to pieces, the materials having no tenacity. This bird commonly uses no lining to its nest, but lays its eggs (three to five in number) on the coarse grass of which the inside is composed. The eggs are pure white, particularly thin-shelled, and consequently perfectly translucent. They are found during the months of February and March."

The only eggs I have seen of this species were sent me from the Nilghiris by Miss Cockburn and Mr. Carter. They are nearly perfect ovals, usually much elongated, but sometimes moderately broad, and very slightly compressed towards one end. They are very fragile, and perfectly pure spotless white in colour. Typically, although smooth and satiny in texture, they have but little gloss, but occasionally a fairly glossy egg is to be met with.

In length they vary from 0·98 to 1·12, and in breadth from 0·75 to 0·79; but the average seems to be about 1·08 by 0·77.

405.—*Pomatorhinus erythrogenys, Vig.*

The Rusty-cheeked Scimitar Babbler breeds from April to June in the Himalayas, at any rate from Darjeeling to the Valley of the Beas, at elevations of from 2,000 to 6,000 feet. It may be *met* with at double this latter altitude, but I doubt if it *nests* higher.

As a rule, the nest is placed on the ground, in some thick clump of dry fern or coarse grass, amongst dead leaves and moss, but at times I have seen it placed in a thick bush 2 or 3 feet from the ground. It is very common near Kotegurh and below Narkunda, where we found nearly a dozen nests, almost all, however, containing young ones. Typically the nest is domed, and is loosely constructed of the materials at hand—coarse grass, dry fern, dead leaves, moss-roots, and the like, some 6 or 7 inches in diameter and 5 or 6 inches high, with a broad entrance on one side, a good deal above the middle. In some cases, however, where a dense bunch of grass or fern completely curves over the spot selected for the nest, the latter is a mere broad, shallow saucer. There is no regular lining to the nests, but a good many fine roots are at times incorporated in the interior of the cavity. All the nests that I have seen were placed near the edges of clumps of brushwood or scrubby jungle.

I ought here to mention that I am by no means certain that the Nepalese and Sikhim, in fact the eastern race of this species *(ferrugilatus, Hodgs.)*, will not have to be separated from the more western *erythrogenys* of Gould. Long ago Blyth remarked (JOURNAL ASIATIC SOCIETY 1845, p. 598) that "there seem to be two marked varieties of *P. erythrogenys*, one having white under parts, with merely faint traces of darker spots, the other with the throat and breast densely mottled with greenish-olive," or, as I should call it, dingy olive grey. This is perfectly true, and, as far as I can make out, the latter variety is not one of sex or age, but is local and confined to Kumaon (where the other form also occurs) and the hills eastward of this province. My own remarks above given refer to the true *erythrogenys*, and so do Hutton's; but Hodgson's and Mr. Gammie's birds both appear to have been, and the latter's certainly were, grey-throated examples. The eggs are undistinguishable, as, indeed though they vary somewhat in shape and size, are those of most of the *Pomatorhini*.

Captain Hutton says that this species is "common from 3,500 feet up to 10,000 or 12,000 feet, always in pairs, turning up the dead leaves on copsewood covered banks, uttering a loud whistle, answering and calling each other. It breeds in April, constructing its nest on the ground of coarse dry grasses and leaf stalks of walnut trees, and is covered with a dome-shaped roof, so nicely blended with the fallen leaves and withered grasses, among which it is placed, as to be almost undistinguishable from them. The eggs are three in number, and pure white; diameter 1·12 by 0·81 inches, of an ordinary oval shape. When disturbed, the bird sprung along the ground with long bounding hops, so quickly that, from its motions and the appearance of the nest, I was led to believe it a species of rat. The nest is placed in a slight hollow, probably formed by the bird itself."

According to Mr. Hodgson's notes, this species would appear to breed at heights of from 2,000 to 8,000 feet. It lays in May and June. On the 20th May, and again on the 6th June, Mr. Hodgson found nests of this species in thick bushes 3 or 4 feet above the ground. They were broad saucer-shaped nests of coarse vegetable fibres, grass, and grass roots, 7 inches or so in diameter, and the cavity, which had no lining, was about 4 inches in diameter by 2 inches in depth. They contained three and four white eggs respectively. One figured measures 0·98 by 0·73. On June 8th he found two more nests at Jaha Powah, on the ground, on edges of brushy slopes close to grassy open plains, the nest a large mass of grass, oven-shaped, open at one and in one case at both ends, protected by the root of a tree. There were two and three white eggs in the nests respectively. The eggs of these nests are figured as measuring 1·08 by 0·73.

Mr. Gammie remarks: "I found a nest of this species below Rungbee, at an elevation of about 2,000 feet, on the 17th June. It was placed on, and partially in, a hole in a bank, and contained two hard-set eggs. It was a large, loose pad of fine grass and dead fern, with a few broad flag-like grass leaves incorporated towards the base, and overhung by a sort of canopy of similar materials. The basal portion was some 6 inches long and 5 inches broad, and about 2 inches thick in the thickest part, with a broad. shallow depression for the eggs of about half that depth."

Writing again this year (1874) he says: "I have only found two more nests this year, and both in the last week of April: the one contained three partially incubated eggs, the other three young birds. These nests were at Gielle, at an elevation of about 2,500 feet. As a rule, these birds nest in open country, immediately adjoining moist thickly wooded ravines, in which they feed, and take refuge if disturbed from the nest. The nest is usually placed on sloping ground, more or less concealed by overhanging herbage, and is composed, according to my experience, of dry grass sparingly lined with fibres. It is large: one I measured *in situ* was 8 inches in height and 7 inches in diameter; the vertical diameter of the cavity was 4 inches and the horizontal 3½ inches. I have not yet found more than three eggs or young ones in any nest."

The eggs of this species are long, and at times narrow, ovals, pure white and fairly glossy, but occasionally almost glossless, without any marks or spottings.

In length they vary from 1·05 to 1·13, and in breadth from 0·73 to 0·83; but the average seems to be about 1·1 by 0·79.

406.—*Xiphoramphus superciliaris, Blyth.*

The Slender-billed Scimitar Babbler, according to Mr. Hodgson's notes, breeds in Sikhim, at elevations of 3,000 to 6,000 feet, during the months of May and June. The nest is a large globular one, composed of dry bamboo leaves and green grass, intermingled and lined with fine roots and fibres. The entrance, which is about 2 to 2·5 in diameter, is at one end. A nest containing four eggs, obtained on the 12th June, measured about 7 inches in diameter externally, and it was placed in the crown of a stump from 2 or 3 feet from the ground. Sometimes the nests are placed in tufts of high grass or in thick bushes, but never at any great elevation above the ground. They lay three or four eggs, which are pure white, and one of which is figured as a broad oval, measuring 0·95 by 0·7.

407.—*Garrulax leucolophus, Hardw.*

According to Mr. Hodgson's notes, the White-crested Laughing Thrush breeds, at various elevations in Sikhim and Nepal, from the Terai to an elevation of 5,000 or 6,000 feet, from April to June. It lays from four to six eggs, which are described and figured as pure white, very broad ovals, measuring 1·2 by 0·9. It breeds, we are told, in small trees, constructing a rude cup-shaped nest amongst a clump of shoots, or between a number of slender twigs, of dry bamboo leaves, creepers, scales of the turmeric plant, &c., and lined with fine roots.

That the eggs should be white seems anomalous. But Dr. Jerdon says: "I have had the nest and eggs brought me more than once when at Darjeeling, the former being a large mass of roots, moss, and grass, with a few pure white eggs."

Moreover nests sent to me from Darjeeling also contained white eggs. One nest taken in July was placed on the outer branches of a tree, at about the height of 8 feet from ground. It was a very broad shallow saucer, 8 inches in diameter, about an inch in thickness, and with a depression of about an inch in depth. It was composed of dead bamboo leaves bound together with creepers, and lined thinly with coarse roots. It contained four fresh eggs. Other similar nests contained four and three eggs each.

The eggs though not properly verified, having been collected by natives, were sent me by different gentlemen, at many years' interval, and all the eggs are precisely alike—very regular broad ovals, pure white, and glossy.

These eggs vary from 1·05 to 1·13 in length, and from 0·89 to 0·95 in breadth; but the average of eleven eggs is 1·1 by 0·91.

On the other hand Captain Hutton gives me a totally different account, which I subjoin though I cannot believe that he is right:—

"This is a very abundant species in the Dhoon, where it breeds in June, on the 28th of which month I took its nest, which contained three eggs of a faint greenish-white, freckled and faintly dashed with rufous brown, the larger end being thickly and almost confluently stained with a darker shade of the same. Diameter 1·0 by 0·81.

"The nest is rather compactly put together, and is composed exteriorly of dry grasses, straw, shreds of thin bark and matting, and lined sparingly with the fine tendrils of climbing plants. It is placed in thick bushes or low shrubby trees. The eggs of this species differ very widely from others of the genus: they resemble the eggs of *Geocichla unicolor* and *G. citrina,* as well as *Merula Wardii,* while the nest is that of *Garrulax.* The latter differs altogether from those of *Geocichla* and *Merula* both in construction and in situation.

"In the Dhoon these birds appear in small parties in dense thickets, and often startle one by the loud burst of chattering laughter with which they suddenly break the deep silence that had previously reigned around. They occasionally ascend the hills to about 5,500 feet, keeping to the brushwood of the glens; but I do not think they exceed that elevation, nor do they permanently remain in the mountains."

408.—*Garrulax cærulatus, Hodgs.*

A nest of the Grey-sided Laughing Thrush found by Mr. Gammie on the 17th June, near Darjeeling, below Rishap, at an elevation of about 3,500 feet, was placed in a shrub, at a height of about 6 feet from the ground, and contained one fresh egg. It was a large, deep, compact cup, measuring about 5·5 in external diameter and about 4 inches in height, the egg cavity being 4 inches in diameter and 2¾ inches in depth. Externally it was entirely composed of very broad flag-like grass leaves firmly twisted together, and internally of coarse black grass and moss roots very neatly and compactly put together. The nest had no other lining.

This year (1874) Mr. Gammie writes: "This species breeds in Sikhim in May and June. I have found the nests in our Chinchona reserves, at various elevations from 3,500 to 5,000 feet, always in forests with a more or less dense under-growth. The nest is placed in trees, at heights of from 6 to 12 feet from the ground, between and firmly attached to several slender upright shoots. It is cup-shaped, usually rather shallow, composed of dry bamboo leaves and twigs and lined with root fibres. One I measured was 5 inches in diameter by 2·5 in height exteriorly; the cavity was 4 inches across and only 1·3 deep. Of course they vary slightly. As far as my experience goes, they do not lay more than three eggs; indeed, at times only two."

Dr. Jerdon remarks that "a nest and eggs, said to be of this bird, were brought to me at Darjeeling, the nest loosely made with roots and grass, and containing two pale blue eggs."

The eggs sent me by Mr. Gammie are a beautiful clear, rather pale, greenish-blue, without any spots or markings. The eggs have a slight gloss. In shape they are typically much elongated and somewhat pyriform ovals, very obtuse at both ends; but moderately broad examples are met with. In length they vary from 1·1 to 1·22, and in breadth from 0·77 to 0·83; but the average of ten eggs is 1·16 nearly by 0·8.

410.—*Garrulax ruficollis, Jard. and Selb.*

Of the Rufous-necked Laughing Thrush Mr. Blyth remarks: "Mr. Hodgson figures the egg of a fine green colour."

The egg is not figured in my collection of Mr. Hodgson's drawings.

Writing from near Darjeeling, in Sikhim, Mr. Gammie says: "I have seen two nests of this bird; both were in Bramble bushes about 5 feet from the ground, and exactly resembled those of *G. cærulatus*, only they were a little smaller. One nest had three young ones, the other three very pale blue unspotted eggs, which I left in the nest intending to get them in another day or two, as I wanted to see if more eggs would be laid, but when I went back to the place, the nest had been taken away by some one. Both nests were found here in May, one at 3,500 feet, the other at 4,500 feet."

411.—*Garrulax albogularis, Gould.*

The White-throated Laughing Thrush breeds throughout the lower southern ranges of the Himalayas from Assam to Afghanistan, at elevations of from 4,000 to nearly 8,000 feet. They lay from the commencement of April to the end of June. The nest varies in shape from a moderately deep cup to a broad shallow saucer, and from 5 to 7 or even 8 inches in external diameter, and from less than 2 to nearly 4 inches in depth internally. Coarse grass, flags, creepers, dead leaves, moss, moss and grass roots, all at times enter more or less largely into the composition of the nest, which, though sometimes wholly unlined, is often neatly cushioned with red and black fern and moss roots. The nests are placed in small bushes, shrubs, or trees, at heights of from 3 to 10 feet, sometimes in forks, but more often, I think, on low horizontal branches, between two or three upright shoots.

Three is, I think, the regular complement of eggs, and this is the number I have always found when the eggs were much incubated. I have not myself observed that this species breeds in company, nor can I ever remember to have taken two nests within 100 yards of each other.

Captain Hutton remarks: "This is very common in Mussoorie at all seasons, and congregates into large and noisy flocks, turning up the dead leaves, and screaming and chattering together in most discordant concert. It breeds in April and May, placing the nest in the forks of young Oaks and other trees, about 7 or 8 feet from the ground, though sometimes higher, and fastening the sides of it firmly to the supporting twigs by tendrils of climbing plants. It is sometimes composed externally almost entirely of such woody tendrils, intermixed with a few other twigs, and lined with black hair-like fibres of mosses and lichens; at other times it is externally composed of coarse dry grasses and leaves of different kinds of orchids, and lined with fibres, the materials varying with the locality. The eggs are of a deep and beautiful green, shining as if recently varnished, and three in number. In shape they taper somewhat suddenly to the smaller end, which may almost be termed obtusely pointed. The diameter 1·19 by 0·87 inches. The usual number of eggs is three, though they vary sometimes to one or two; but only on one occasion out of more than a dozen nests have I found four eggs. The old bird will remain on the nest until within reach of the hand."

From Murree Captain C. H. T. Marshall writes: "This was the most beautiful egg taken this season, being of a rich, deep, glossy, greenish-blue colour. The nest is composed of fresh ivy twigs, with the leaves attached, tightly woven together. The birds breed on small trees, not high up, at the end of a branch. While their nests were being examined, they came round in flocks to see what was happening, chattering and making that peculiar laughing note from which this genus takes its name. They are even gregarious in the breeding season, and all the nests were found pretty near each other about 6,000 feet up."

The nest sent me by Captain Marshall is a broad, shallow cup, or saucer as I should perhaps call it, some 6 inches in diameter, with a central depression of at most 1·5 inches, below which the nest is an inch or 1·5 in thickness. It is very loosely put together, and composed interiorly of moderately fine dry twigs and roots, but exteriorly it is completely wound round with slender green Ivy twigs to which the leaves are attached. It has no lining or pretence for such.

Captain Cock says: "The White-throated Laughing Thrush lays one of the most lovely eggs with which I am acquainted. The nest is usually low, never more than 10 feet or so from the ground; and of some fifteen or more nests that I have taken, all were constructed of long stalks of the ground Ivy, twisted round and round into a wreath. The nest is not a deep cup: if anything it is rather shallow, but it is very wide. I always found these nests in thick forest, at high elevations from 6,000 to 7,000 feet. The birds used to sit close, and when put off their nests would commence their outcries, and from all parts they would assemble and flit about almost within reach of one's hand, making an awful noise, and in the dark shade of the forest their white gorgets had quite a ghostly look. The eggs are always three in number, of a beautiful shining blue green, sometimes of a very long oval type. I have found the nests at Murree from the 3rd May to quite the end of June."

Captain G. F. L. Marshall writing of this species says: "A nest found at Nynee Tal on Ayar Pata, about 7,000 feet above the sea, contained two fresh eggs on the 31st May. The eggs were of a rich deep greenish-blue, unspotted. The nest was a scanty and loosely-built structure, composed of roots and stems of grass and creepers, cup-shaped, rather shallow, and lined with a curious black creeper, very like coarse hair. The birds were gregarious even though breeding, and were moving about the under-wood in parties of three to five. The nest was near the top of an Oak sapling in a dense coppice, placed close against the stem in the bunch of leaves at the top. The only difficulty in finding it lay in the scantiness of the structure, rather than in the concealment by the foliage. The bird was on the nest, and only moved off about 3 feet, sitting close by and chattering indignantly during my inspection. They are noisy birds, constantly on the move, and their notes, though rather harsh, are very varied and quite *conversational*."

The eggs are long, and pointed at the small end, to which they sometimes taper much. They are very glossy, and vary from a deep, dull blue—the blue of a dark oil paint, very much deeper than that of any other of the *Timalinæ* with which I am acquainted—to a deep, intense, greenish-blue. Possibly other as deeply coloured eggs occur in this family, but I have seen none like them. They are of course entirely unspotted.

In length they vary from 1·16 to 1·25, and in breadth from 0·8 to 0·86; but the average of some twenty eggs measured is 1·22 by 0·83.

412.—*Garrulax pectoralis, Gould.*

Mr. Eugene Oates tells us that he "found the nest of the Black-gorgetted Laughing Thrush in the Pegu Hills, on the 27th April, containing three fresh eggs; the bird was sitting. The nest was placed in a bamboo clump about

7 feet from the ground, made outwardly of dead bamboo leaves and coarse roots, lined with finer roots and a few feathers; inside diameter 6 inches, depth 2 inches. Two eggs measured 1·04 by 0·83 and 0·86. Colour, a beautiful, clear blue."

One of these eggs sent by Mr. Oates seems rather small for the bird. It is a very broad, slightly pyriform, oval, of an uniform pale greenish-blue tint, and very fairly glossy. It measures 1·05 by 0·87.

This egg appears to me to be an abnormally small one. A nest sent me from Sikhim, where it was found in July, contained much larger eggs, and more in proportion to the size of the bird. The nest I refer to was placed in a clump of bamboos about 5 feet from the ground. It was a tolerably compact, moderately deep, saucer-shaped nest, between 6 and 7 inches in diameter, composed of dead bamboo sheaths and leaves bound together with creepers and herbaceous stems, and thinly lined with roots. It contained two eggs. These are rather broad ovals, somewhat pointed towards one end, of a uniform pale greenish-blue, and are fairly glossy.

These eggs measured 1·33 and 1·30 in length, and 0·98 in breadth.

413.—*Garrulax moniliger, Hodgson.*

Of the Necklaced Laughing Thrush Dr. Jerdon says: "I procured both this and the last (the Black-gorgetted Laughing Thrush) at Darjeeling, and have also seen one or both in Sylhet, Cachar, and Upper Burmah. They both associate in large flocks, and frequent more open forest than most of the previous species. The eggs are greenish-blue."

From Sikhim Mr. Gammie writes: " In the first week of June I found a nest in low jungle, at 2,000 feet, containing four greenish blue eggs, but, as I did not see the bird, left it until my return a week later. I then saw the female, but in the interval the young had been hatched. The nest closely resembled that of *G. cærulatus*, both in shape and composition, and was similarly situated between several upright slender shoots to which it was firmly attached. It was, however, within 5 feet of the ground, which is lower by 5 feet or so than *G. cærulatus* generally builds."

Mr. Eugene Oates writes, "On the 27th April I shot a female in the Pegu Hills off her nest. This latter contained one young one, and one deformed egg which unfortunately got broken, color a deep blue. The nest was placed in a small seedling bamboo about 6 feet from the ground at a joint where a number of small twigs shot out, inverted umbrella fashion. The nest in every respect closely resembled that of *pectoralis*."

A nest found below Darjeeling in the first week of June on the branches of a good sized tree, at a height of 12 feet from the ground, was similar to that described by Mr. Gammie, and contained a single fresh egg. This is a moderately broad oval, somewhat pointed towards the small end, and exhibits very little gloss. It is of precisely the same colour as those of the preceding species, but measures only 1·2 in length by 0·9 in breadth.

414.—*Garrulax ocellatus, Vig.*

I know nothing personally of the nidification of the White-spotted Laughing Thrush, which breeds nowhere, so far as I know, west of Nepal, but I had a nest with a couple of eggs and one of the parent birds sent me from Darjeeling. The nest was taken in May in one of the low warm valleys leading to the Great Runjeet, and is said to have been placed close to the ground in a thick clump of fern and grass. The nest is chiefly composed of these intermingled with moss and roots, and is a large loose structure some 7 inches in diameter.

Mr. Blyth remarked in the Ibis (1867) that this species was "surely a *Trochalopteron* rather than a *Garrulax*," and the eggs seem to confirm this view. These are long, cylindrical ovals, very obtuse even at the smaller end. They are about the same size as those of *Garrulax albogularis*, with a very delicate pale blue ground and little or no gloss. One egg is spotless; the other has a few chocolate brown specks or spots towards the large end. They measure 1·18 by 0·86 and 1·25 by 0·85.

415.—*Trochalopteron erythrocephalum, Vig.*

From Kumaon westwards, at any rate as far as the valley of the Beas, the Red-headed Laughing-Thrush is, next to *lineatum*, the most common species of the genus. It lays in May and June, at elevations of from 4,000 to 7,000 feet, building on low branches of trees, at a height of from 3 to 10 feet from the ground.

The nests are composed chiefly of dead leaves bound round into a deep cup with delicate fronds of ferns and coarse and fine grass, the cavities being scantly lined with fine grass and moss roots. It is difficult by any description to convey an adequate idea of the beauty of some of these nests. The deep red brown of the withered ferns, the black of the grass and moss roots, the pale yellow of the broad flaggy grass, and the straw yellow of some of the finer grass stems, all blended together into an artistic wreath, in the centre of which the beautiful sky blue and maroon-spotted eggs repose. Externally the nests may average about 6 inches in diameter, but the egg cavity is comparatively large and very regular, measuring about 3½ inches across and fully 2¼ inches in depth. Some nests of course are less regular and artistic in their appearance, but, as a rule, those of this species are particularly beautiful.

The eggs vary from two to four in number.

Mr. E. C. Buck sent me the following note:—

"I found a nest of this species near Narkunda (about 30 miles north of Simla) on the 26th June. It was placed on the branch of a Banj tree, some 8 feet from the ground, and contained two eggs, half set. Nest and eggs forwarded."

Dr. Jerdon says that Shore, as quoted by Gould in his Century, says that "it is by no means uncommon in Kumaon, where it frequents shady ravines, building in hollows and their precipitous sides, and making its nest of small sticks and grasses, the eggs being five in number, of a sky blue colour." But Shore, as the showman would say, is, so far as eggs and nests are concerned, "a fabulous writer," and the eggs are always more or less spotted, and no nest that I ever saw of this species was composed of "small sticks."

Mr. Blyth says: "Mr. Hodgson figures a green egg, spotted much like that of *Turdus musicus*, as that of the present species;" but in all Hodgson's drawings this *green* represents a greenish-*blue*, as I have tested in dozens of cases.

Captain G. F. L. Marshall remarks: "I found a nest of this species on the 15th May at Nynee Tal on the top of Aya Pata, at an elevation of about 7,500 feet above the sea. The nest was a rather deep cup, neatly made and placed about 5 feet from the ground amongst the outer twigs of a thick Barberry bush, the leaves of which entirely concealed it. It was composed of a thick layer of dead Oak and Rhododendron leaves, bound round outside with just enough of grass stems and moss to keep the leaves in place; it had no lining of any description. The egg cavity was 3½ inches broad by nearly 2½ inches deep. The eggs, two in number, were blue, with a few spots, streaks, and scrawls of brown tending to form a zone at the larger end. They were large for the size of the bird. The ground colour was like that of the eggs of a Song Thrush in England.

"Several more nests found subsequently with eggs up to 4th June were similar in structure, but placed in small Oak trees from 5 to 15 or 18 feet from the ground."

The eggs are very long ovals, of a delicate pale greenish-blue ground colour, with a few spots, streaks, and streaky blotches of a very rich though slightly brownish-red at the large end. These eggs, though somewhat longer in shape and less freely marked, are exactly of the same type as those of *T. cachinnans* and *T. variegatum.* The texture of the shell is very fine and compact, and they have a slight gloss. In some eggs the spottings are more numerous, and, besides the primary markings already mentioned, a few purple spots and blotches, mostly very pale, are intermingled with the darker markings. In almost all the eggs that I have seen the markings were absolutely confined to the larger end.

In length the eggs vary from 1·15 to 1·22, and in breadth from 0·8 to 0·86; but the average is about 1·2 by 0·82.

416.—*Trochalopteron chrysopterum, Gould.*

The Yellow-winged, is the eastern representative of the Red-headed, Laughing-Thrush, and breeds, so far as is yet known, only in Nepal, Sikhim, and Bhootan, from all which localities we have quite young birds, but no eggs.

Dr. Jerdon says: "The eggs are greenish-blue, in a nest neatly made with roots and moss," and this is the extent of our present information, though I feel confident that the eggs will *prove* to be more or less *spotted.*

417.—*Trochalopteron subunicolor, Hodgs.*

The Olivaceous or Plain-coloured Laughing Thrush breeds, according to Mr. Hodgson's notes, in the central region of Nepal from April to June. It nests in open forests and groves, building its nest on some low branch of a tree 2 or 3 feet from the ground between a number of twigs. The nest is large and cup-shaped; one measured externally 5·5 in diameter and 3·38 in height; internally 2·75 deep and 3·12 in diameter. The nest is composed externally of grass and mosses lined with soft bamboo leaves. Three or four eggs are laid, unspotted greenish-blue. One is figured as 1·07 by 0·7.

418.—*Trochalopteron variegatum*, *Vig.*

As already noticed, I have, almost without exception, followed Mr. Gray in the nomenclature adopted in this congeries of notes, but I cannot at present follow him in separating this and other species from *subunicolor*, *squamatum* and *phœniceum*, under *Pterocyclus*.

The Variegated Laughing-Thrushes breed only in the Himalayas, but in these everywhere from the central portion of Nepal to Murree, at elevations of from 4,000 to 7,000 or 8,000 feet. As I have remarked elsewhere (LAHORE TO YARKAND), they lay during the latter half of April, May, and June. The nest is a pretty compact, rather shallow, cup, composed exteriorly of coarse grass in which a few dead leaves are intermingled; it has no lining, but the interior of the nest is composed of rather finer and softer grass than the exterior, and a good number of dry needle-like Fir leaves are used towards the interior. The nest is from 5 to 8 inches in diameter exteriorly, and the cavity from 3 inches to 3·5 in diameter and about 2 inches deep. The nest is usually placed in some low, densely foliaged, branch of a tree, at say from 3 to 8 feet from the ground; but I recently obtained one placed in a thick tuft of grass, growing at the roots of a young Deodar, not above 6 inches from the ground. They lay four or five eggs.

Writing from Murree Captain C. H. T. Marshall remarks: "We found one nest on the 15th June, about 20 feet up a Spruce Fir at the extremity of the bough. Nest, deep cup-shaped, solidly built of grass roots and twigs; the bird sits close. Eggs, light greenish-blue, sparingly spotted with pale purple, the same size as those of *M. castanea.*"

The first egg that I obtained of this species, sent me by Mr. E. C. Buck, C. S., and taken by himself near Narkunda, late in June, out of a nest containing two eggs and two young ones, was a nearly perfect, rather long, oval, and precisely the same type of egg as those of *T. erythrocephalum* and *T. cachinnans*, but considerably smaller than the former. The ground colour is a pale, rather dingy, greenish-blue, and it is blotched, spotted, and speckled, almost exclusively at the larger end, and even there not very thickly, with reddish-brown. The egg appeared to have but little gloss. Other eggs subsequently obtained by myself were very similar, but slightly larger and rather more thickly and boldly blotched, the majority of the markings being still at the large end.

The colour of the markings varies a good deal: a liver red is perhaps the most common, but yellowish-brown, pale purple, purplish-red, and brownish-red also occur. Here and there an egg is met with almost entirely devoid of markings, with perhaps only one moderately large spot and a dozen specks, and these so deep a red as to be all but black.

The eggs vary from 1·07 to 1·15 in length, and from 0·76 to 0·82 in breadth.

420.—*Trochalopteron squamatum*, *Gould.*

From Sikhim my friend Mr. Gammie writes: "I have never as yet found more than one nest of the Blue-winged Laughing Thrush, and this one was found on the 18th May at Mongphoo, at an elevation of about 3,500 feet. The nest was placed in a bush (one of the *Zingiberaceæ*), growing in a marshy place, in the midst of dense scrub, at an elevation of about 4 feet from the ground, and was firmly attached to several upright stems. It was composed of dry Bamboo leaves, held together by the stems of delicate creepers, and was lined with a few black fibres. It was cup-shaped, and measured externally 5·7 in diameter by 3·6 in height, and internally 3·7 in width by 2·6 in depth. The nest contained three eggs, which were unfortunately almost ready to hatch off, so that three is probably the normal number of the eggs."

According to Mr. Hodgson's notes the Blue-winged Laughing-Thrush breeds in May and June in the central region of Nepal in forests, at elevations of from 2,000 to 6,000 feet. The nest is placed in a fork of a branch on some small tree, and is a large mass of dry leaves and coarse dry grass, 7 or 8 inches in diameter externally, mortar-shaped, the cavity about 2·5 deep, and lined with hair-like fibres. The nest, though composed of loose materials, is very firm and compact. They lay four or five eggs, unspotted, verditer blue, one of which is figured as a broad regular oval, only slightly compressed towards one end, measuring 1·2 by 0·9.

One of the eggs taken by Mr. Gammie (the others were unfortunately broken) is a long, almost cylindrical, oval, very obtuse at both ends and slightly compressed towards the smaller end, so that the egg has a pyriform tendency. It measures 1·25 by 0·82. The colour is an excessively pale greenish-blue, precisely the same as that of the eggs of *Temenuchus malabaricus;* but then this present egg was nearly ready to hatch off when taken, and the fresh eggs are somewhat deeper coloured.

Subsequent to his letter above quoted Mr. Gammie on the 10th June found a second nest of this species similar to the first, containing three nearly fresh eggs. These are similar in shape to that above described, but in colour are a beautiful, clear, verditer blue, altogether a much brighter and richer tint than that of the first. They measure 1·2 and 1·25 by 0·88.

421.—*Trochalopteron rufigularis, Gould.*

Common as this species is about Simla, I have never yet secured the nest, and know nothing certain about the eggs.

Captain Hutton says: "This species appears usually in pairs, sometimes in a family of four or five. It breeds in May, in which month I took a nest, at about 6,500 feet elevation, in a retired and wooded glen; it was composed of small twigs externally and lined with the fine black fibres of Lichens. The nest was placed on a horizontal bough, about 7 feet from the ground, and contained three pure white eggs. Diameter 1·12 by 0·69; shape, ordinary. The stomach of the old bird contained sand, seed, and the remains of wasps."

One egg that I possess of this species I owe to Captain Hutton, and it is of the *Pomatorhinus* type—a long oval, slightly pointed, pure white egg, with but little gloss, measuring 1·08 by 0·75.

From Sikhim a nest, said to belong to this species, has been recently sent me. It was found below Darjeeling in July, and was placed in a double fork of the branchlets of a medium sized tree. It is a moderately deep cup, composed almost entirely of dry, coarser and finer, tendrils of creepers, and is lined with a little black moss roots and a few scraps of dead leaves. It contained three fresh eggs.

The eggs, like the one received from Captain Hutton, are pure white, of a somewhat elongated oval shape, but have a more decided gloss than the specimen he sent.

Two of these eggs measured 1·10 and 1·05 in length, and 0·79 and 0·80 in breadth.

422.—*Trochalopteron phœniceum, Gould.*

Mr. Gammie says: "I have found altogether seven nests of the Crimson-winged Laughing Thrush in and about Rishap, at elevations between 4,000 and 5,000 feet, and on various dates between the 4th and 23rd May. The locality chosen for the nest is in some moist forest amongst dense undergrowth. It is placed in shrubs, at heights of from 6 to 10 feet from the ground, and is generally suspended between several upright stems to which it is firmly attached by fibres. It is chiefly composed of dry Bamboo leaves and a few twigs, and lined with black fibres and moss roots. A few strings of moss are twisted round it externally to aid in concealing it. It is a moderately deep cup, measuring externally about 5 inches in diameter and 4 inches in height, and internally 3½ inches in width and 2 inches in depth.

"The eggs are almost always three in number, but occasionally only two. Of the seven nests taken by me, five contained eggs and two young ones."

The Crimson-winged Laughing Thrush, according to Mr. Hodgson's notes, breeds in Sikhim, at elevations of from 3,000 to 5,000 feet, during the months of April, May, and June. The nest is placed in the fork of some thick bush or small tree, where three or four sprays divide, at from 2 to 5 feet above the ground. The nest is a very deep compact cup. One measured *in situ* was 4·5 in diameter and the same in height externally, while the cavity was 3 inches in diameter and 2·25 deep. It was very compact and was composed of dry leaves, creepers, grass flowers, and vegetable fibres, more or less lined with moss-roots and coated externally with dry bamboo leaves. They lay, we are told, three or four eggs.

Dr. Jerdon says: "A nest and eggs said to be of this bird were brought to me at Darjeeling; the nest made of roots and grass, and the eggs, three in number, pale blue, with a few narrow and wavy dusky streaks."

The eggs are singularly lovely. In shape they are elongated ovals, generally very obtuse at both ends, and many of them exhibiting cylindrical or pyriform tendencies. The shell is very fine and fairly glossy, and the ground colour is a most beautiful clear pale sea-green in some, greenish-blue in others. The character of the markings is more that of the Buntings than of this family. There are a few strongly marked deep maroon, generally more or less angular, spots or dashes principally about the large end, and there are a few spots and tiny clouds of pale soft purple, and then there are an infinite variety of hair line hieroglyphics, twisted and scrawled in brownish or reddish purple, about the egg. The markings are nowhere as a rule crowded, and towards the small end are usually sparse and occasionally wholly wanting. In some eggs a bad pen seems to have been used to scribble the pattern, and every here and there instead of a fine hair line there is a coarse thick one.

In length the eggs vary from 0·98 to 1·15, and in breadth from 0·7 to 0·79; but the average of eleven eggs is 1·03 by 0·72.

423.—*Trochalopteron cachinnans, Jerd.*

The Nilghiri Laughing-Thrush breeds, according to my many informants, throughout the more elevated portions of the mountains from which it derives its trivial name, from February to the beginning of June.

A nest of this species sent me by Mr. H. R. P. Carter, who took it at Coonoor on April 22nd (when it contained two fresh eggs), is externally a rather coarse clumsy structure, composed of roots, dead leaves, small twigs, and a little lichen, about 5 inches in diameter, and standing about 4½ inches high. The egg cavity is, however, very regularly shaped, and neatly lined with very fine grass stems and a little fine tow-like vegetable fibre. It is a deep cup, measuring 2½ inches across and fully 3¾ inches in depth.

A nest taken by Miss Cockburn was a much more compact structure placed between four or five twigs. It was composed of coarse grass, dead and skeleton leaves, a very little lichen, and a quantity of moss. The egg cavity was lined with very fine grass. The nest was externally about 5½ inches in diameter and nearly 6 inches in height, but the egg cavity had a diameter of only about 2½ inches and was only about 2¼ inches deep.

It was Jerdon, I believe, who gave the name of Laughing-Thrushes to this group, and this name is applicable enough to this particular bird, the one with which he was most familiar, for it does *laugh*—albeit, a most maniacal laugh; but the majority of the group have not the shadow of a giggle even in them, and should have been designated "Screaming Squabblers."

Mr. J. Darling, Jr., says: "This bird breeds from February to May. I have found the nests all over the Nilghiris, at elevations of from 4,500 to 7,500 feet above the sea. The nest is placed indiscriminately in any bush or tree that happens to take the bird's fancy, at heights of from 3 to 12 feet from the ground.

"In shape it is circular, a deep cup, externally some 6 inches in diameter and 5 or 6 inches in height, and with a cavity 3 to 4 inches wide and often fully 4 inches in depth. The nest is composed of moss and small twigs, at times of grass mingled with some spiders' webs: sometimes there is a foundation of dead leaves. The cavity is lined with fur, cotton wool, feathers, &c.

"The eggs are two or three in number."

Mr. Wait, writing from Coonoor, says: "*T. cachinnans* breeds about May, and lays from three to five oval eggs. The ground is bluish, with ash coloured and brown spots and blotches, and occasionally marks." None of my other correspondents, however, admit that the bird ever lays more than three eggs.

Mr. Davison tells me that "this bird breeds commonly on the Nilghiris, just before the rains set in, in May and the earlier part of June, but it occasionally breeds earlier (in April) or later (in the latter end of June). The nest is cup-shaped, composed of dead leaves, moss, grass, &c., and lined with a few moss roots or fine grass. It is placed in the fork of a branch about 6 or 8 feet from the ground. The eggs are a bluish green, mottled chiefly towards the larger end, and sometimes also streaked with purplish brown. The normal number of eggs is two; sometimes, however, three are laid."

From Kotagherry Miss Cockburn remarks: "The name 'Laughing-Thrush' is most applicable to this bird, and its notes are often mistaken for the sound of the human voice. This bird is very shy, except when its nest contains eggs or young, when it becomes extremely bold. I was quite surprised to see a pair whose nest I was taking come so close as to induce me to put out my hand to catch them. The Laughing-Thrush builds a pretty, though large, nest, and generally selects the forked branches of a thick bush, and commences its nest with a large quantity of moss, after which there is a lining of fine grass and roots, and the withered fibrous covering of the Peruvian Cherry *(Physalis peruviana)*, the nest being finished with a few feathers, in general belonging to the bird. The inside of the nest is perfectly round, and rarely contains more than two eggs, belonging to the owner. The eggs are of a beautiful greenish blue color, with a few large and small brown blotches and streaks, mostly at the large end. I have found the nests of these birds in February, March, and April. Occasionally the Black-and-white Crested Cuckoo which appears on these hills in the month of March deposits its eggs (two in number) in the nest of this Thrush. They are easily distinguished, as their color is quite different from the Thrush's eggs, being entirely dark bluish green."

The first specimens that I obtained of the eggs of this species were kindly sent to me by the late Captain Mitchell and Mr. H. R. P. Carter of Madras; they were taken on the Nilghiris. They are moderately broad ovals, somewhat pointed towards one end, larger than the average eggs of *T. lineatum*, and about the same size as large specimens of the eggs of *Malacocircus terricolor*, and *Malcolmi*. The ground color is a delicate pale blue, and towards the large end, and sometimes over the whole surface, they are speckled, spotted, and blotched, but only sparingly, with brownish red and blackish brown, and amongst these markings a few cloudy streaks and spots of dull faint reddish purple are observable. The eggs have not much gloss.

Numerous other specimens subsequently received from Miss Cockburn and others correspond well with the above description. More or less pyriform varieties are common. In some eggs the markings are almost entirely wanting; there being only a very faint brownish pink freckling at the large end, and in many eggs, even some that are profusely spotted all over, the markings consist only of darker or lighter brownish pink shades. Occasionally a few, almost black, twisted lines are intermingled with the other markings, and in these cases the lines are frequently surrounded by a reddish purple nimbus.

The eggs vary in length from 0·92 to 1·08, and in breadth from 0·74 to 0·8, but the average of 20 eggs measured was 1·0 by 0·76.

425.—*Trochalopteron lineatum, Vig.*

Next to the Common House Sparrow, the Streaked Laughing-Thrush is perhaps the most familiar bird about our houses at all the hill stations of the Himalayas westward of Nepal and throughout the lower ranges on which these stations are situated; this species breeds at elevations of from 5,000 to 8,000 feet.

It lays from the end of April to the beginning of September, and, very possibly, occasionally even earlier and later. I took a nest on the 29th April near Mussoorie; Mr. Brooks obtained eggs in May and June at Almorah; Captain G. F. L. Marshall at Mussoorie in July and August, and Captain C. H. T. Marshall at Murree from May to the end of July. I again took them in July and August near Simla, and Captain Beavan found them as late as the 6th of September near the same station.

So far as my own experience goes, the nests are always placed in very thick bushes or in low thick branches of some tree, the Deodar appearing to be a great favourite. Those I found averaged about 4 feet from the ground, but I took a single one in a Deodar tree fully 8 feet up. The bird, as a rule, conceals its nest so well that, though a loose and, for the size of the architect, a large structure, it is difficult to find, even when one closely examines the bush in which it is. The nest is nearly circular, with a deep cup-like cavity in the centre, reminding one much of that of *Malacocircus terricolor*, and is constructed of dry grass and the fine stems of herbaceous plants, often intermingled with the bark of some fibrous plant, with a considerable number of dead leaves interwoven in the fabric, specially towards the base. The cavity is neatly lined with fine grass roots, or occasionally very fine grass. The cavity varies from 3 inches to 3·5 in diameter, and from 2·25 inches to 2·75 in depth; the walls immediately surrounding the cavity are very compact, but the compact portion rarely exceeds from ·75 to 1 inch in thickness, beyond which the loose ends of the materials straggle more or less, so that the external diameter varies from 5·5 inches to nearly 10.

The normal number of eggs appears to me to be three, although Captain Beavan cites an instance of four being found.

Captain Hutton tells us (J. A. S. B. XVII,) that in the neighbourhood of Mussoorie "this bird is met with in pairs, sometimes in a family of four or five, and may be seen under every bush. The nest is placed near the ground, in the midst of some thick low bush, or on the side of a bank amidst overhanging coarse grass, and not unfrequently in exposed and well frequented places; it is loosely, and rather slovenly, constructed of coarse dry grasses and stalks externally, lined sometimes with fine grass, sometimes with fine roots. The eggs are three in number, and in shape and size exceedingly variable, being sometimes of an ordinary oval, at others nearly round."

From Almorah and Nynee Tal my friend, Mr. Brooks, writes to me "that this bird is common everywhere. The nest is generally placed in a low tree or bush where the foliage is thick. It is composed of grass, and lined with finer grass. The eggs are three in number, 1 inch and one line long by nine lines broad. They are of a light greenish blue, the tint being much the same as that of the eggs of *Acridotheres tristis*. They lay from the commencement of May to the end of June."

Captain G. F. L. Marshall tells me that "the Streaked Laughing-Thrush is very common at Mussoorie, where it is called by the public the Robin of India. It breeds in July and August all about Landour. The nest is cup-shaped, rather shallow and loosely put together, made of grass and fibre with some moss and a few dead leaves twisted into it; it is placed in a low bush or else on the ground concealed among the grass-roots on the hill side. The eggs, three or four in number, are oval, rather large for the bird, and of a pure light-blue color without spots. I took eggs on the 26th and 28th July, and on the 16th August."

Mr. E. C. Buck writes: "At Mutianee, three marches north of Simla, I found on the 28th June a nest in a bush on the side of a scantily 'jungled' hill. It was 2 feet from ground, constructed of grass and stalks externally, and lined with fibrous roots. It contained three fresh eggs. The nest measured—exterior diameter 6 inches, in height exteriorly 4 inches; the interior diameter was 3 inches, and the depth of the cavity 2 inches."

The late Captain Beavan tells us that "on the 16th of August 1866, I found a nest in the garden, in a Rose bush, with four pale blue eggs in it, like those of *Acridotheres tristis*. The nest is a large structure, firmly built of dry twigs, bark, sticks, ferns, and roots. Another nest, with three eggs only, was found in a thick clump of everlasting peas close to the ground on the 6th of September. The female sat very close, and this may have been the second nest of the same pair that built the nest mentioned above, as it was built not far from the first."

The eggs, of which I must have seen some hundreds, as this is the commonest Babbler about both Mussoorie and Simla, are typically regular and moderately broad ovals. Abnormally elongated, spherical and pyriform varieties occur; some are nearly round like a King-fisher's, and I have seen one almost as slender as a Swift's, but, as a rule, the eggs vary but little either in shape or color. They are pefectly spotless, moderately glossy, and of a delicate pale greenish blue, which of course varies a little in shade and intensity of color, but which is very much paler on the average than those of any of the *Malacocirci*, and at the same time less glossy. I am not at all sure whether *lineatum* is rightly associated with species like *T. cachinnans*, *T. variegatum*, and *T. erythrocephalum*, which all have spotted eggs.

In length the eggs vary from 0·8 to 1·13, and in breadth from 0·63 to 0·8; but the average of 58 eggs carefully measured is 1·01 by 0·73.

426.—*Trochalopteron imbricatum*, *Hodgs.*

According to Mr. Hodgson's notes, this species, the so-called Bristly Laughing-Thrush, if really distinct from *T. lineatum*, which I am not yet prepared to assert, breeds commonly in the central region in Nepal during April and May. The nest is described as a simple wide saucer, with a small cavity composed of grass-roots and grass and lined with hair. Of a nest taken at Jaha Powah, June 1st, it is recorded: "Breeds in small scrubby woods, under cover of bushes, on the ground; nest, simple, made of dry grass, lined with thin elastic fibres, which help to retain its form; inside about 3·5 in diameter and 1 inch in depth, but slovenly; eggs, three, *intense verditer* blue."

427.—*Actinodura Egertoni*, *Gould.*

There is no figure of the Rufous Bar-wing's nest or eggs amongst the original drawings of Mr. Hodgson now in my custody, but in the British Museum series there appears to be, since Mr. Blyth remarks: "Mr. Hodgson figures the nest of this bird like that of an English Redbreast with pinkish-white eggs."

428.—*Actinodura nipalensis*, *Gould.*

The Hoary Bar-wing is said in Mr. Hodgson's notes to breed from April to June in Sikhim and the central region of Nepal up to an elevation of 4,000 or 6,000 feet. The nest is placed in holes, in crevices between rocks and stones; is circular and saucer-shaped. One measured externally 3·62 in diameter by 2 inches in height; the cavity measured 2·5 in diameter and 1·37 in depth. The nest is composed of fine twigs, grass, and fibres, and externally adorned with little pieces of lichen, and internally lined with fine moss-roots. The birds are said to lay from three to four eggs, which are not described, but they are figured as pinky white, about 0·85 in length and 0·55 in width. Mr. Blyth, however, remarks: "One of Mr. Hodgson's drawings represents a white egg with ferruginous spots, disposed much as in that of *Merula vulgaris.*"

Clearly there is some mistake here. Most of the drawings I have are the originals, taken from the fresh specimens when they were obtained, with Mr. Hodgson's own notes, on the reverse, of the dates on and places at which he took or obtained the eggs, nests, and birds figured, with often a description and dimensions of the two former, and invariably full dimensions of the latter. On the other hand, the drawings in the British Museum are mostly more finished and artistic *copies* of these originals; so how the spots got on to the eggs of the British Museum drawing I cannot say; there is no trace of such in mine.

429.—*Sibia capistrata, Vigors.*

I do not know on what grounds Mr. Gray separates the common Himalayan Black-headed Sibia from the Nepal form of this bird, which he constitutes a distinct species, under Hodgson's name *nigriceps,* but he has done so with specimens of both before him.

The eastern specimens are perhaps a shade brighter coloured; but I have not as yet detected any other difference, and as for the eggs those from Darjeeling and Murree are precisely identical.

The Black-headed Sibia lays throughout the Himalayas from Afghanistan to Bhootan, at elevations of from 5,000 to 7,000 feet.

It lays during May and June, and perhaps part of July, for I find that on the 11th July I found a nest of this species, a little below the lake at Nynee Tal, on the Jewli Road, containing two young chicks apparently not a day old.

They build on the outskirts of forests, constructing their nests towards the ends of branches, at elevations of from 10 to 50 feet from the ground. The nest is a neat cup, some 4 or 5 inches in diameter and perhaps 3 inches in height, composed chiefly of moss and lined with black moss roots and fibres. In some of the nests that I have preserved a good deal of grass leaves and scraps of lichen are incorporated in the moss. The cavity is deep, from 2½ to 3 inches in diameter and not much less than 2 inches in depth.

They lay two or three eggs; not more, so far as I yet know.

From Murree Captain C. H. T. Marshall tells us that "the egg of this bird was, we believe, previously unknown, and it was a mere chance that we found the whereabouts of their nests, as they breed high up in the Spruce Firs at the outer end of a bough. The nest is neatly made of moss, lined with stalks of the Maiden Hair Fern. The eggs are pale blue, spotted and blotched with pale and reddish brown. They are ·95 in length and ·7 in breadth. This species breeds in June, about 7,000 feet up."

Nearly 20 years prior to this, however, Captain Hutton had remarked: "At Mussoorie this bird remains at an elevation of 7,000 feet throughout the year, but I never saw it under 6,500 feet. Its loud ringing note of *titteree-titteree tweëyo,* quickly repeated, may constantly be heard on wooded banks during summer. It breeds in May, making a neat nest of coarse dry grasses as a foundation, covered laterally with green moss and wool and lined with fine roots. The number of eggs I did not ascertain, as the nest was destroyed when only one had been deposited, but the colour is pale bluish-white, freckled with rufous. The nest was placed on a branch of a Plum tree in the Botanical Garden, Mussoorie."

Captain Cook says that he "found this species breeding at Murree, at 6,000 feet elevation.

"I took my first nest on the 5th June.

"It builds near the tops of the highest Pines, and unless seen building its nest with the glasses, it is impossible to find the nest with the unaided eye.

"The nest is placed on the outer extremity of an upper bough in a Pine tree; is constructed of moss lined with stalks of the Maiden Hair Fern. Three eggs is the largest number I ever found. The eggs are light greenish-white with rusty spots and blotches principally at the larger end."

From Nynee Tal Captain G. F. L. Marshall writes: "This species builds in trees and bushes. The only nest I examined personally was a very compact and thick cup-shaped structure of moss and grass, and roots lined with grass, and placed amongst the outer twigs of a Blackberry bush overhanging a cliff. It was ready for the eggs on the 23rd May. It was found at Nynee Tal on Agar Pata, about 7,000 feet above the sea."

From Sikhim Mr. Gammie writes: "I have only myself taken two nests of this common species. I found both of them the same day (the 21st May) in the Chinchona reserves, at an elevation of about 5,000 feet. Both nests were in the forest, built on the outer branches of trees, at heights the one of 15 the other of 40 feet from the ground. The nests were cup-shaped, and very neatly made of moss, leaves and fibres and lined with black fibres. One measured externally 4·6 in diameter by 2·75 in height, and internally 2·4 in diameter and 1·7 in depth. One nest contained two fresh eggs, the other two hard-set ones; so pehaps two is the normal number, though the natives say that they lay three. As might be expected from the bird's habit of feeding on the insects on moss-covered trees in moist forests, the nests were in forest by the sides of streams."

The eggs are rather broad, slightly pyriform, ovals, often a good deal pulled out as it were at the small end. The shell is fine, but almost entirely devoid of gloss. The ground colour is a pale greenish-white or very pale bluish-green. The markings are various and complicated: first there are usually a few large, irregular, moderately dark brownish-red spots and splashes; then there are a very few, very dark, reddish-brown hair lines, such as one finds on Buntings' eggs; then there is a good deal of clouding and smudging here and there of pale, dingy, purplish or brownish red (all these markings are most numerous towards the large end); and then besides these, and almost entirely confined to the large end, are a few pale purple specks and spots. Sometimes the markings are almost wholly confined to the thicker end of the egg.

The eggs vary in length from 0·95 to 1·0, and in breadth from 0·69 to 0·72.

430.—*Sibia picaoides, Hodgs.*

Mr. Gammie obtained a nest of the Long-tailed or Magpie Sibia from the top of a tall tree, situated at an elevation of about 4,000 feet, in the neighbourhood of Rungbee, near Darjeeling. This was on the 17th June, and the nest contained five fresh eggs. The nest is as perplexing as are the eggs; for the nest is that of a Bulbul, the eggs those of a Shrike or Minivet. The nest is a deep compact cup, about 4½ inches in diameter and 2¾ inches in depth. The egg cavity is 3 inches across and fully 1¾ inch in depth. Interiorly the nest is composed of excessively fine grass stems very firmly interwoven; externally of the stems of some herbaceous plant, a Chenopod, to which the dry blossoms are still attached, intermingled with coarse grass, a single dead leaf, and one or two broad grass blades more or less broken up into fibres.

The eggs, for the authenticity of which Mr. Gammie positively vouches, are very unlike what might have been expected. They are absolutely Shrike's eggs—broad ovals, pointed towards one end, with a slight gloss, the ground a slightly greyish-white, with a good many small spots and specks of pale yellowish-brown and dingy purple, chiefly confined to a large irregular zone towards the larger end. They vary in length from 0·86 to 0·93, and in breadth from 0·7 to 0·73.

431 *bis.—Acanthoptila pellotis, Hodgs.*

According to Mr. Hodgson's notes and figures, this species builds, in a fork of a tree, a very loose, shallow, grass nest. One is recorded to have measured 4·87 in diameter and 1·75 in height externally, and internally 3·37 in diameter and an inch in depth. The eggs are verditer blue, and are figured as 1·1 by 0·65.

I may here note that *Acanthoptila pellotis* and *A. leucotis* are totally distinct, as Mr. Hodgson's figures clearly show. Hodgson published *leucotis* apparently under the name of *nipalensis*, so that the two will stand as *A. pellotis* and *A. nipalensis.*

432.—*Malacocircus terricolor, Hodgs.*

The Bengal Babbler* breeds throughout the plains of the Bengal Presidency (including Bengal, North-Western Provinces, Central Provinces, Oudh, and the Punjab), and I may add in the less desert portions of Sindh, although the race found in that province is not exactly identical with the Bengal bird, and in some respects closely approaches the Malabar race. In Northern Rajpootana it is rare, and further south in the quasi-desert tracts of Central and Western Rajpootana it disappears according to my experience.

Eastward in Cachar and Assam it appears to occur as a mere straggler, but I have no record of its having bred there. It lays from the latter half of March until the close of July, but the great majority lay during the first week after the setting in of the rains, which varies according to locality and season, from the 1st of June to the 15th July.

They build very commonly in gardens, in thick Orange, Citron or Lime shrubs, but their nests may be found almost anywhere, in thick shrubs or small trees of any kind, or in thick hedges, at heights of from 4 to 10 feet from the ground, always placed in some fork towards the centre of the shrub or hedge. The nests are rather loosely put together cups, composed of grass stems and roots varying in fineness, and often lined with horse-hair. Some are deep and neatly constructed, others loose, straggling, and shallow, the cavity varying from 3 to more than 4 inches in diameter and from less than 2 to nearly 3 inches in depth.

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* I cannot understand Jerdon's saying, Vol. 2, p. 65, that "*M. terricolor*, so far as we know, is not found in the North-Western Provinces." It is one of our very commonest birds throughout the whole of these provinces.

Three is the normal number of the eggs, but I have repeatedly found four.

Captain Hutton writes to me: "A nest of this bird was taken in the Dehra Dhoon on the 14th May, and was composed entirely of fine roots, the thinnest being placed within as a lining. Subsequently three others were procured, one of which was externally composed of coarse dry grasses and leaves, with a scanty lining of fine roots; the other two were constructed of the fine woody tendrils of climbing plants and lined like the others with fine roots. These latter had a strong resemblance to some of the nests of *Garrulax albogularis,* while the difference exhibited in the nature of the materials used arises from the various character of the localities in which the bird may choose to build. Each nest contained four beautiful eggs of a full bright turquoise green, shining as if varnished. The eggs were nearly all hard-set. This species does not ascend the hills, but appears to be confined to the Dhoon, where it may be seen in small parties in gardens, hedgerows, and low brushwood, turning over the dead leaves in search of seeds and insects. Its flight is low, short, and apparently laboured from the shortness and rounded form of the wing, but on the ground it hops along with speed. The note is clamorous and chuckling and uttered in concert."

Mr. A. Anderson says: "Although one of the most common birds in the North-West Provinces, and in fact verging on a nuisance, its nidification is interesting, inasmuch as its nest (in common with that of *M. Malcolmi*) is used as a nursery for the young of *Hierococcyx varius* and *Coccystes melanoleucos.*

"This Babbler builds, as a general rule, during the early part of the rains (June to August), laying usually three or four eggs of a bright greenish-blue colour. The nest itself recalls that of the Black-bird, but it is frequently very clumsily made. On the 21st June last a boy brought me a nest of this species containing *eight* eggs. Two, if not three, of this clutch are easily separable from the others, being more oval and somewhat smaller, and are unquestionably parasitical eggs; but it is quite impossible to say whether they belong to *H. varius* or *C. melanoleucos.*

"Again, on the 9th July, I took a nest in person, which also contained eight eggs. Seven of these are all alike and are well incubated, while the eighth is quite fresh, and doubtless owes its parentage to one of the abovementioned Cuckoos.

"Strange to say I have now another nest marked down, which in like manner contains the same number of callow young. It is just possible that the foster parents may have to perform double duty in this case.

"From the foregoing it may be inferred that *M. canorus* does occasionally lay more than four eggs, or as the birds are gregarious even during the breeding season, it is possible enough that two birds may occasionally deposit eggs in the same nest.

"I should not think that *H. varius* (the "Brain fever and Delirium-tremens Bird" as it is frequently called) had much difficulty in depositing her eggs in the nest of the *Malacocirci,* for I have frequently noticed that all the Babblers in the neighbourhood make a clean bolt of it immediately this Cuckoo puts in an appearance, no doubt owing to its great similarity to the Indian Sparrow Hawk (*M. badius*).

"During the months of September and October I have observed several Babblers in the act of feeding one young *H. varius,* following the bird from tree to tree, and being most assiduous in their attentions to the young interloper."

Mr. R. M. Adam remarks: "I took a nest of this bird in Agra on the 17th July. It contained five eggs, all of which were nearly hatched. Again on the 21st I took another nest containing only one hard-set egg."

Writing from Calcutta, Mr. J. C. Parker says: "I found a nest of this bird, near my house in Garden Reach, on the 23rd June. It contained four fresh eggs."

The eggs of this species are very variable in colour, shape, and size. Typically they are rather broad ovals, somewhat compressed towards one end, and much the shape of, though a good deal smaller than, those of our English Song Thrush. Some are, however, long and cylindrical; others more or less spherical. The colour varies from a pale blue, like that of *Trochalopteron lineatum,* to a deep dull blue, recalling, but yet not so dark as, that of *Garrulax albogularis.* The eggs are typically glossy, but it is remarkable that in a large series the deepest coloured are always far the most glossy. Some deep blue eggs of this species are most intensely glossy, more so than almost any other of our Indian eggs, except those of *Metopodius indicus.* I need scarcely say that the eggs are entirely spotless and devoid of all markings, but I may note that each egg is invariably the same colour throughout, and that I have never met with a specimen in which the shade of colour varied in the same egg.

In length the eggs vary from 0·88 to 1·15, and in breadth from 0·75 to 0·82; but the average of fifty-one eggs measured is 1·01 by 0·78.

433.—*Malacocircus griseus, Lath.*

I should say that the White-headed Babbler breeds all over the plain country of Southern India, not ascending the hills to any great elevation. At the same time, many people would very likely separate the Madras, Mangalore, and Anjango birds, and insist on their being different species; but for my part, seeing how the birds vary in each locality and what a perfect and unbroken chain of intermediate forms connects the most different looking examples, and that all the several races are separable from the other species of this group by their more or less conspicuously pale heads, I prefer to keep them all as *griseus.*

This species, thus considered, breeds apparently twice a year from April to June, and again in October and even later.

About Madras the nest is commonly placed in thick thorny hedges of a shrub locally known as "Kurka-puli," said by Balfour to be *Garcinia cambogia,* but which does not look like a *Garcinia* at all. The nest is a loosely made cup, composed of grass stems and roots, and the eggs vary from three to five in number.

Dr. Jerdon says: "I have often found the nest of this bird, which is composed of small twigs and roots, carelessly and loosely put together, in general at no great height from the ground. It lays three or four blue eggs."

The eggs of this species that I possess were taken by Mr. Davison in May in the immediate neighbourhood of Madras. They are all pretty regular, somewhat cylindrical ovals, excessively glossy, spotless, and of a deep greenish-blue, much deeper than the eggs of any of the other *Malacocirci* are as a rule; in fact, they approach in colouring to the eggs of *Garrulax albogularis.*

They vary in length from 0·9 to 1·0, and in breadth from 0·62 to 0·74; but I have seen too few eggs to be able to strike any reliable average.

434.—*Malacocircus malabaricus, Jerd.*

The Jungle Babbler, like the White-headed one, breeds pretty well over the whole of Southern India, but while the latter is chiefly confined to the more open plain country, the former is the bird of the uplands, hills, and forests. Still the Jungle Babbler is found at times in the same localities as the White-headed one, and what is more, specimens occur, as in Cochin, which partake of the distinctive characters of both. A great deal still remains to be done in working out properly this group; both in Sindh on the west and the Tributary Mehals on the east, and again in some parts of the Nilghiris, races occur quite intermediate between typical *terricolor* and typical *malabaricus,* while in the south, as already mentioned, forms intermediate between this latter and *griseus* seem common. Three distinguishable races again of *griseus* are met with, but running the one into the other, while intermediate forms between this species and *Somervillei* (Sykes) are also met with.

Mr. Davison remarks: "This bird seems to be very irregular in its time of breeding. I have taken the nest in May, June, October, and December. The nest is rather a loose structure of dry grass and leaves, lined with fine dry grass; it is generally placed in the middle of some thick thorny bush, and cannot generally be got at without paying the penalty of well scratched hands. The eggs, generally five in number, are of a very deep blue with a tinge of green, but of not so decided a tinge as in the eggs of *M. griseus.* It breeds on the slopes of the Nilghiris, not ascending to more than about 6,000 feet."

Mr. Wait, writing from Coonoor, says: "*M. malabaricus* builds a cup-shaped nest in small trees and bushes, and lays from three to five very round oval verditer blue eggs."

Three eggs sent me by Mr. Carter from Coonoor in the Nilghiris are absolutely undistinguishable from those of *A. Malcolmi.* Like these they are a uniform, rather deep greenish-blue, devoid of spots or markings, and very glossy. I do not think that, if the eggs of *malabaricus, Malcolmi,* and *terricolor* were once mixed, it would be possible to separate them with certainty. Other eggs taken by Mr. Davison are similar but slightly smaller, and, taking them as a whole, I think they average rather darker than those of the two species just mentioned.

The eggs vary in length from 0·93 to 1·02, and in breadth from 0·71 to 0·82; but the average of nine eggs is 0·97 by nearly 0·77.

435.—*Malacocircus Somervillei, Sykes.*

Of the nidification of the Rufous-tailed Babbler, (which, so far as I yet know, is confined to the narrow strip of country lying beneath the Ghâts for about 60 miles north and south of Bombay, and to the hills or ghâts overlooking this,) all I yet know is contained in the following brief note by Mr. E. Aitken: he says,

"I once found a nest of the Rufous-tailed Babbler at Khandalla. I cannot tell the level precisely, but it cannot have been far from 2,000 feet above the sea. It was at the end of May or the very beginning of June. The nest was in a small spreading tree in level, open forest, country. The situation was just such a one as *M. Malcolmi* generally chooses—the end of a horizontal branch with no other branches underneath it; but it was not so high as those of *Malcolmi* usually are, for I could reach it from the ground. The nest was rather flat and contained three eggs, almost hatched, of an intense greenish-blue colour.

"In Bombay, where it is far more common, I once, on the 1st October, saw a pair followed by one young one and a young *Coccystes melanoleucos*. This was on a hill, and indeed these birds seem to confine themselves pretty much to hilly ground."

436.—*Argya Malcolmi, Sykes.*

The Large Grey Babbler breeds throughout the central portions of both the Peninsula and Continent of India from the Nilghiris to the Dhoon. It does not extend westwards to Sindh, or the North-West Punjab, or eastwards far into Bengal Proper. In the Central and North-West Provinces it lays from early in March well into September, having at least two and, as I believe, often three broods.

It builds on low branches of small trees or in thick shrubs, at no great elevation from the ground, say at heights of from 4 to 10 feet, a somewhat loosely woven, but yet generally neat, cup-shaped nest, composed, as a rule, chiefly of grass roots, but often with an admixture of thin sticks and grass. Generally there is no lining, but I have found nests scantily lined with very fine grass and even horse-hair. Even when, as is the rule, entirely unlined, the inside is finished off very nicely and smoothly. I have often seen ragged and untidy nests, but these are the exception. Externally the nest is some 5 or 6 inches in diameter and 3 or 4 inches in height; the cavity is from 3 to 4 inches across and from 2 to nearly 3 inches in depth.

Four is the normal number of the eggs laid, but I have several notes of finding five.

Mr. Brooks says: "This species breeds in waste lands overgrown with scanty jungle. The nest is made of sticks, roots, grass, &c., is rather bulky, and is placed in some moderate-sized bush about 7 or 8 feet from the ground. The eggs are greenish-blue, bluer and not so brightly coloured as those of *M. terricolor*."

Mr. R. M. Adam remarks: "Near Muttra, on the 31st October, I found a pair of birds busy lining the interior of a nest which they had built in a Plum tree."

Writing from Kotagherry, (Nilghiris,) Miss Cockburn remarks: "Their nests are built of a few twigs and roots, very loosely put together, (on some low branch of a tree,) and so few of even these as hardly to keep the eggs from falling through. These Babblers lay four oval eggs of a greenish-blue colour, but I once saw a nest with eight, and as there were several of these birds close to it, I have no doubt two or three shared it together, perhaps to avoid the necessity of each pair building for itself. Their nests are found in the months of March and April.

"It is in the nests of this species and our Common Laughing-Thrush (*T. cachinnans*) that I have chiefly found the eggs of the Pied Crested Cuckoo."

Of this species Captain G. F. L. Marshall remarks: "I have taken eggs on the 20th June in Cawnpoor, the 31st July in Bolundshuhur, and the 25th August in Allyghur. The nest is almost always in a Keekur tree in a fork about half way up, and near the end of a branch. It is composed of Keekur twigs and lined with roots. It is thinner in structure than that of *M. terricolor*, but has an outer casing of thorns which the latter wants. They lay four blue eggs, larger and paler than those of *M. canorus*."

The eggs of this species do not appear to me to differ perceptibly from those of *M. terricolor*. When one first takes a nest or two of each of them, one is apt to draw distinctions and fancy that the eggs of the two species can be discriminated; but after taking forty or fifty nests of each species, it becomes obvious that there is no variety of the one in either colour, shape, or size that cannot be paralleled in the other. All I have said of the eggs of *terricolor* are applicable to the eggs of this species, and the only difference that, with a huge series of each before me, I can discover is that, as a body, there is less variation in the colour of the eggs of *Malcolmi* than in those of *terricolor*.

In length they vary from 0·88 to 1·1, and in breadth from 0·73 to 0·85; but the average of fifty eggs measured is 0·99 by 0·77.

438.—*Chatarrhæa caudata, Dum.*

The Striated Bush Babbler breeds throughout India, not however ascending any of our many mountain ranges to any great elevation.

They lay pretty well all the year round; at any rate from early in March to early in September their eggs are common. Mr. W. Blewett took a nest at Hansie on the 3rd January, and single nests are recorded by others as found in October, December, and February. They certainly have two broods a year and perhaps more, the first being hatched from March to May, the second from June to August.

They build in low thorny bushes, and occasionally in clumps of high grass, the nest being rarely more than 3 feet from the ground. The nest itself is cup-shaped, and composed of grass and roots, often unlined, at times lined with very fine grass stems or horse-hair. As a rule, it is neatly and compactly built, with a deep cavity some 2 to 3 inches in diameter, and 1·75 to 2·25 in depth, but I have seen straggling, ragged, and comparatively shallow nests of this species having an external diameter of fully 7 inches. Three is the normal number of the eggs, but four are occasionally met with.

Mr. Brooks says: "This species builds in much the same sort of places as *A. Malcolmi*, but it chooses a low thick bush, the nest not being more than 3 feet from the ground. Nest neatly built of grass, roots, hair, &c., and the eggs bright bluish-green, very glossy, and much resembling those of *Accentor modularis*."

Mr. R. M. Adam remarks: "I took a nest of this bird in Oudh on the 22nd April. It contained a young bird and one unhatched egg. The nest was made of grass not well worked together and had a lining of finer grass. The ground-work was composed of twigs and stems of creepers interlaced. The exterior diameter of the nest measured 5 inches, and the egg cavity was 2 inches deep. In one case this bird did not lay till the fifth day after the nest was finished. About Agra this bird breeds during July and August."

The eggs are typically of a moderately elongated oval shape, slightly compressed towards one end, but more or less spherical and pyriform varieties occur; and I have one specimen, a very long pointed egg, which, so far as size and shape go, might pass for an egg of *Cypselus affinis*; and though this is a peculiarly abnormal shape, I have others which somewhat approach it in form. The eggs are glossy, often brilliantly so, and of a delicate, pure, spotless, somewhat pale blue. The shade of colour in this egg varies very little, and I have never met with either the very pale or very dark varieties common amongst the eggs of *M. terricolor* and occasionally found amongst those of *A. Malcolmi*. In colour, size, and shape they are not very unlike those of our English Hedge Sparrow, whose early eggs formed the prize of our first boyish nesting expeditions, but they are slightly larger and typically somewhat more elongated.

In length they vary from 0·75 to 0·92, and in breadth from 0·6 to 0·7; but the average of one hundred and fifteen eggs measured was 0·82 by 0·64.

439.—*Chatarrhæa Earlei, Blyth.*

The Striated Reed Babbler breeds in suitable localities throughout Continental India, from Sindh to Tipperah and Assam, as also in Upper Burmah. Reedy margined lakes, canals and perennial streams are its favourite haunts, and wherever within the limits above indicated these abound, and the locality is moist and warm, *Earlei* is pretty sure to be met with.

They lay twice during the year, between the latter end of March and the early part of September, building a neat, compact, and rather massive cup-shaped nest, either between the close growing reeds, to three or more of which it is firmly bound, or in some little bush or shrub more or less surrounded by high reed grass. The broad leaves and stringy roots of the reed, common grass, and grass roots are the materials of which it generally constructs its nest, which varies much in size, according to the situation and fineness of the material used. I have seen them, composed almost wholly of reed leaves, fully 7 inches in diameter and 5 in height, and again built entirely of fine grass stems not more than 4 inches across and 3 inches in height. When semi-suspended between reeds, they are always smaller and more compact, while when placed in a fork of a low bush, they are larger and more straggling. The cavity (always neatly finished off, but very rarely regularly lined, and then only with very fine grass stems or roots) is, usually, about 3 inches in diameter by 2 inches in depth.

Captain G. F. L. Marshall remarks: "In the Saharunpoor District *C. Earlei* commences building about the middle of March, and the young are hatched towards the middle of April. The nest is usually placed in the middle of a tuft of Sarkerry grass, and sometimes in a bush or small tree, generally 3 or 4 feet from the ground. It is a deep cup-shaped structure, rather neatly made of grass without lining, and woven in with the stems if in a clump of grass, or firmly fixed in a fork if in a bush or low tree. The interior diameter is about 3 inches, and the depth nearly 2 inches. The eggs, four in number, are of a clear blue colour without spots of any kind. In shape they are oval, rather thinner at one end; the shell is smooth and thin. The eggs are of the same colour, but considerably larger than those of *Chatarrhœa caudata*. *Chatarrhœa Earlei* breeds commonly in the Sub-Siwalik District of the Doab; it seems fond of water, as most of the nests I have found were close to the canal bank. It is gregarious even in the breeding season; small flocks of seven or eight keeping together, fluttering in and out of the low bushes, but seldom alighting on the ground, and occasionally making a noisy chattering cry, especially when disturbed."

From the Pegu District Mr. Eugine Oates writes: "I found two nests on the 24th May, one quite empty though finished, the other containing three eggs.

"The nests were placed a few feet apart in an immensely thick patch of Elephant grass, the under-growth being fine, once tall, but now dead, grass. It was upon this dead stuff, which in May is much flattened down that I found the nests. They were not attached to anything, but simply laid in a depressed platform about a foot above the ground, in among the thickest of the stalks of Elephant grass.

"The nest is a bulky structure some 6 or 8 inches in external diameter and 4 inches in height, composed chiefly of coarse reeds becoming finer interiorly till the egg cup is reached, where the grasses employed are tolerably fine and neatly interwoven. The cavity itself is more than a hemisphere, the diameter being 3 inches and the depth about 2 inches.

"The eggs are of a beautiful blue colour, rather pointed at one end.

"*Chatarrhœa Earlei* is a very common bird in all the grass-covered plains of Burmah near the level of the sea. It appears to be as gregarious in the breeding season as at other times."

Colonel Tickell has the following note on the nidification of this species in the Asiatic Society Journal, 1848, p. 301:—

"*Burra phenga.*—Nest hemispherical, of grasses rather loosely interwoven; generally on bushes in jungle. Eggs two to four; rather lengthened shape; clear, full, verditer blue.—June."

The eggs closely resemble those of *C. caudata* both in colour and shape, but they are conspicuously larger. To judge from Hewitson's figure, for I have never seen the egg, they in shape, size, and colour closely resemble the eggs of *Accentor alpinus*, some I have being very slightly larger, and others exactly the same size as the figure referred to.

In length they vary from 0·87 to 1·01, and in breadth from 0·7 to 0·78; but the average of fifteen eggs is 0·96 by 0·73.

440.—*Megalurus palustris. Horsf.*

Nothing has hitherto been recorded of the nidification of the Striated Marsh Babbler (as Jerdon calls it), although it has a very wide distribution and is very common in suitable localities.

This bird has nothing of the Babbler in it. It rises perpendicularly out of the reeds, sings rather screechingly while in the air, and descends suddenly. It has much more of a song than any of the Babblers, a much stronger flight, and its sudden, upward, towering flight and equally sudden descent is unlike anything seen amongst the Babblers.

Mr. E. C. Nunn procured the nest and an egg of this species, (which along with the parent birds he kindly forwarded to me,) at Hoshungabad on the 4th May 1868. The nest was round, composed of dry grass, and situated in a cluster of reeds between two rocks in the bed of the Nerbudda. It contained a single fresh egg.

Writing from Wan, in the Pegu District, Mr. Eugene Oates remarks: "I found a nest on the 19th May containing four eggs recently laid. The female flew off only at the last moment when my pony was about to tread on the tuft of grass she had selected for her home.

"The nest was placed in a small but very dense grass tuft about a foot above the ground. It was made entirely of coarse grasses and assimilated well with the dry and entangled stems among which it lay. The nest was very deep, almost purse-shaped, eliptical in transverse section, somewhat globular when viewed in front, but viewed from the side it is much flattened. It is about 8 inches in total height at the back, and some 2 inches lower in front, the upper part of the purse being as it were cut off slantingly, and thus leaving an entrance which is more or less circular. The width is 6½ inches, and the breadth from front to back 4 inches. The interior is smooth, lined with somewhat finer grass, and measures 4 inches in depth by 3 inches from side to side, and by 2 inches from front to back.

"*Megalurus palustris* is very common throughout the large plains lying between the Pegu and Sittang Rivers. At the end of May they were all breeding. The nest is however difficult to find, owing to the vast extent of favorable ground suited to its habits. Every yard of the land produces a clump of grass likely enough to hold a nest, and as the female on some occasions apparently sits still till the nest is actually touched, while at others she flies off when one is still distant, it becomes a difficult and laborious task to find the nest."

The eggs are much the same shape and size as those of *Calamodyta brunnescens*. They have a dead white ground, thickly speckled and spotted with blackish and purplish brown, and have but a slight gloss; the speckling, everywhere thick, is generally densest at the large end, and there chiefly do spots, as big as an ordinary pin's head, occur. At the large end, besides these specklings, there is a cloudy, dull, irregular cap, or else isolated patches, of very pale inky purple, which more or less obscure the ground colour. In the peculiar speckly character of the markings these eggs recall doubtless some specimens of the eggs of the different Bulbuls, but their natural affinities seem to be with those of the *Calamodytinæ*.

The eggs vary from 0·83 to 0·97 in length, and from 0·61 to 0·65 in breadth.

441.—*Chætornis striata, Jerd.*

Dr. Jerdon remarks that Mr. Blyth mentions that the nest of the Grass Babbler nearly accords with that of *Malacocircus*, and that the eggs are blue.

I cannot find the passage in which Blyth states this, and I cannot help doubting its correctness. This bird, like the preceding, is not a bit of a Babbler. I have often watched them in Lower Bengal, amongst comparatively low grass and rush along the margins of ponds and jheels, not, as a rule, affecting high reed, or seeking to conceal themselves, and showing themselves freely enough, but with a song and flight wholly unlike that of any Babbler.

They are very restless, soaring about and singing a monotonous song of two notes, something resembling that of a Pipit, but clear and loud. They do not soar in one spot like a Sky Lark, as Jerdon says, but rise to the height of from 30 to 50 yards, fly rapidly right and left, over perhaps one-fourth of a mile, and then suddenly drop on to the top of some little bush, or other convenient post, and there continue their song.

Mr. Brooks remarks: "On the 28th August 1869, I observed at the side of the railway, at Jheenjuck Jheel, on the borders of the Etawah and Cawnpoor District, several pairs of *Chætornis striata*. A good part of the jheel was covered with grass about 18 inches high, and to this they appeared partial, though occasionally I found them among the long reeds. The part of the jheel where they were found was drier than the rest, there being only about an inch of water in places, while other portions were quite dry.

"I noticed the bird singing while seated on a bush or large clump of grass, and sometimes it perched on the telegraph wires alongside of the line of railway, continuing its song while perched.

"By habits and song it seems more nearly allied to the Pipits than the Babblers. Males shot early in September were obviously breeding, and a female shot on the 13th of that month contained a nearly full-sized egg."

It does not do to be too positive, but I should be inclined to believe that the eggs are not uniform coloured, blue and glossy like a Babbler's, but dull, dead, or greenish white, with numerous small specks and spots.

444.—*Hypsipetes psaroides, Vig.*

The Himalayan Black Bulbul breeds throughout the outer and lower ranges of the Himalayas, at any rate from Bhootan to Afghanistan, at elevations varying from 2,000 to 6,000 feet.

They lay mostly in May and June, but eggs may occasionally be met with during the latter half of April.

The nest of *Hypsipetes psaroides* is very like that of some of the *Otocompsas*. It is usually made of rather coarse-bladed grass, with exteriorly a number of dry leaves, and more or less moss incorporated, and lined with very fine grass-stems and roots of moss. A good deal of spiders' web is often used exteriorly to bind the nest together, or attach it more firmly to the fork in which it rests. Its general shape is a moderately deep cup, the cavity measuring some 2½ inches in diameter by 1½ inch in depth. The sides, into which leaves and moss are freely interwoven, vary from an inch to a couple of inches in thickness. The bottom, loosely put together, is rarely more than from a quarter to half an inch in depth. It appears to be generally placed on the fork of a branch, at a moderate height from the ground.

Four is the normal number of eggs, but I have more than once found three partially incubated ones in a nest.

From Darjeeling Mr. Gammie remarks: "A nest of this bird, which I took on the 17th June, at a height of nearly 50 feet from the ground, on one of the topmost branches of a tree, contained three hard-set eggs. This was below Rungbee, at an elevation of about 3,000 feet. The nest was a compact, moderately deep cup, composed of very fine twigs and stems, and with a quantity of dead leaves incorporated in the structure, especially towards its lower surface; it had no lining, but the stems used towards the interior of the nest were somewhat finer than the rest. Exteriorly the nest had a diameter of about 4·5, and a height of about 2·5; interiorly a diameter of about 2·5, and a depth of nearly 1·5."

Mr. Hodgson, writing in Nepal, says:—

May 20th, Jaha Powah.—Two nests on the skirts of the forests in medium sized trees placed on the fork of a branch. They are made of moss and dry fern and dry elastic twig tops, and lined with the long elastic needles of *Pinus longifolia.* They are compact and rather deep, half pensile, that is to say, partly slung between the branches of the fork to which they are attached by bands of vegetable fibres. Each contained four eggs, pinkish-white, thickly spotted with dark sanguine." Another year he notes:—

May 9th, in the Valley.—A mature female with nest and eggs. Nest saucer-shaped, the cavity 3·5 wide by 2·5 deep, made of slender twigs and grass fibres, with no lining. Eggs three, pale pink, blotched all over with sanguine brown."

Writing from Almorah Mr. Brooks tells us that "the nest and eggs were found by Mr. Horne on the 27th May near Bheem Tal."

Captain G. F. L. Marshall also found a nest in the same place. He says: "I have only myself found the nest once at Bheem Tal (4,000 feet); it was situated in a thicket. The nest of this species is similar in shape but much more substantial than those of the Common Bulbul. The eggs are much larger and more elongated in shape, but the colouring is similar to those of the Bulbul, and in many cases the blotches have a tendency to form a zone near the thick end. The nest I found was taken on the 10th June and contained fresh eggs."

From Mussoorie Captain Hutton records the following very full and interesting note:—

"They breed during April, May, and June, making a rather neat cup-shaped nest, which is usually placed in the bifurcation of a horizontal branch of some tall tree; the bottom of it is composed of thin dead leaves and dried grasses, and the sides of fine woody stalks of plants, such as those used by *Pycnonotus leucogenys,* and they are well plastered over externally with spiders' webs; the lining is sometimes of very fine tendrils, at other times of dry grasses, fibrous lichens, and thin shavings of the bark of trees left by the wood-cutters. I have one nest, however, which is externally formed of green moss with a few dry stalks, and the spiders' webs, instead of being plastered all over the outside, are merely used to bind the nest to the small branches among which it is placed. The lining is of bark shavings, dry grasses, black fibrous lichens, and a few fine seed stalks of grasses. The internal diameter of the nest is 2¾ inches, and it is 1½ inches deep. The eggs are usually three in number, of a rosy or purplish white, sprinkled over rather numerously with deep claret or rufescent purple specks and spots. In colours and distribution of spots there is great variation, sometimes the rufous and sometimes the purple spots prevailing; sometimes the spots are mere specks and freckles, sometimes large and forming blotches; in some the spots are wide apart, in others they are nearly, and sometimes in places, quite confluent; while from one nest the eggs were white, with widely dispersed dark purple spots and dull indistinct ones appearing under the shell. In all the spots were more crowded at the larger end."

From Murree Captain C. H. T. Marshall remarks: "Numerous nests of this species were found, agreeing well with Hutton's description. They breed in May and June, never above 6,000 feet."

The eggs are rather long ovals. Typically a good deal pointed towards the small end, and more or less pyriform, but at times nearly perfect ovals. They have little or no gloss. The ground colour varies from white, very faintly tinged with pink, to a delicate pink, and they are profusely speckled, spotted, blotched, or clouded with various shades of red, brownish-red, and purple. The markings vary much in character, extent, and intensity of colour. There seem to be two leading types, with, however, almost every possible intermediate variety of markings. The one is thickly speckled over its whole surface with minute dots of reddish purple, no dot much bigger than the point of a pin, and no portion of the ground colour exceeding 0·1 in diameter free from spots. In these eggs the specklings are most dense, as a rule, throughout a broad irregular zone surrounding the large end, and this zone is thickly underlaid with irregular ill-defined streaky clouds of the dull inky purple. In some eggs of this type, the smaller end is comparatively free from specks. In the other type, the surface of the egg is somewhat sparingly, but boldly, blotched and splashed, first, with deep umber, chocolate or purple brown, and, secondly, with spots and clouds of faint inky purple, recalling not a little the style of markings of the eggs of *Rhynchops albicollis.* Then there are eggs partly speckly and partly blotched, some in which the markings are all rich red and where no secondary pale purple clouds are observable, and others again in which all the markings are dull purplish brown. Generally, it may be said that the markings have a tendency to form a cap or zone at the large end.

A nest of three eggs recently obtained from Mussoorie were more richly coloured than any I have yet seen, and were decidedly glossy. The ground colour is a rich rosy pink, boldly, but sparingly, blotched and spotted with deep maroon, underlaid by clouds and spots of pale purple, which appear as if beneath the surface of the shell. In all the eggs the markings are far most numerous at the large end, where in one they form a huge confluent maroon coloured patch, mottled lighter and darker.

A specimen recently obtained in Cashmere on the 20th June was a somewhat elongated oval, more or less compressed towards one end; a delicate glossy white ground with a faint pink tinge; a rich zone of reddish purple spots and specks round the large end; a few similar markings scattered sparingly over the rest of the surface of the egg, and a multitude of very faint streaks and clouds of very *pale* inky purple underlying the primary markings.

In length the eggs vary from 0·9 to 1·15, and in breadth from 0·7 to 0·78; but the average of twenty-five eggs measured is 1·03 by 0·75.

445.—*Hypsipetes nilghiriensis, Jerd.*

Mr. Blyth considers the Nilghiri Black Bulbul as identical with Sykes' *Ganeesa,* which latter name would of course have priority; on the other hand, Mr. Gray considers them distinct, and so does Captain Hayes Lloyd, a gentleman who appears recently to have looked into the question. I have not a sufficient series of the Mahableshwar "*Ganeesa*" to enable me to pronounce definitely on the subject, and therefore for the present follow Mr. Gray in considering the Nilghiri bird distinct.

Mr. Davison tells me that "this species breeds from April to about the middle of June. The nest is generally placed from 12 to 20 feet from the ground, in some dense clump of leaves; favorite sites are the bunches of parasitic plants, with which nearly every Acacia, and, in fact, nearly every other tree about Ootacamund, is covered. The nest is composed exteriorly of moss, dry leaves, and roots, lined with roots and fibres; the normal number of eggs is two; they are white with claret colored and purplish spots."

A nest of this species taken at Coonoor on the 14th March 1869 by Mr. Carter, to whom I owe this and many other nests from the Nilghiris, reminds one much of those of the Red-cheeked Bulbuls. A wisp of dry grass and dead leaves with the dead leaves greatly predominating exteriorly, twisted into a shallow cup, some 4½ inches in diameter externally, and with a shallow depression tolerably neatly lined with finer grass stems measuring some 3 inches across and perhaps an inch in depth. The bottom of the nest is almost exclusively composed of dead leaves; while even in the sides, externally, little but these are visible, only a few grass stems crossing in and out, here and there, sufficiently to keep the leaves in their places.

Mr. Wait remarks, writing from Coonoor: "Our Black Bulbul breeds from March to June. It builds a cup-shaped nest neatly and firmly made. Outside, the nest is chiefly composed, as a rule, of green moss, grass stalks and fibres, while inside it is lined with fine stalks and hair. The cavity is from 2·5 to 3 inches in diameter and about half that depth. Two is certainly the normal number of the eggs; indeed, I have never found more."

That the Nilghiri bird should lay usually only *two* eggs, and this seems a well ascertained fact, while our very closely allied Himalayan form lays, as I can personally certify, regularly *four*, is certainly very strange.

The eggs of this species, sent me from the Nilghiris by Messrs. Carter and Davison, very closely resemble those of *H. psaroides* from the Himalayas. The eggs are of course of the Bulbul type, but in form are typically much more elongated and conical than the true *Bulbuls*. The ground colour varies from white to a delicate pink. The markings consist of different shades of deep red and pale washed-out purple. In some the markings are bold, large, and blotchy. In others minute and speckly, and in both forms there is a tendency to confluence towards the large end, where there is commonly a more or less perfect, but irregular, zone. The eggs though smooth and satiny have commonly little or no gloss, and, considering their size, are very delicate and fragile.

In length they vary from 1·0 to 1·17, and in breadth from 0·7 to 0·8.

447.—*Hypsipetes M'Clellandii, Horsf.*

The Rufous-bellied Bulbul, according to Mr. Hodgson's notes, breeds in the central region of Nepal, and low down nearly to the Terai, from April to June. Its nest is a shallow saucer suspended between a slender horizontal fork, to the twigs of which it is firmly bound like an Oriole's, with vegetable fibres and roots. It is composed of roots, and dry leaves bound together with fibres and lined with fine grass or moss-roots. The bird is said to lay four eggs, but these are neither figured nor described.

450.—*Criniger ictericus, Strickl.*

The Yellow-browed Bulbul breeds, apparently, throughout the hilly regions of Ceylon and the southern portion of the Peninsula of India. I have never taken the nests myself, and I have only detailed information of their nidification on the Nilghiris, which they ascend to an elevation of from 6,000 to 6,500 feet, and where they lay from March to May.

A nest of this species taken by Mr. Wait near Coonoor on the 20th of March is a small shallow cup hung between two twigs measuring some 3½ inches across and ¾ inch in depth. It is composed of excessively fine twigs and lined with still finer hair-like grass; is attached to the twigs by cobwebs, and has a few dead leaves attached by the same means to its lower surface. It is a slight structure, nowhere I should think above ¼ inch in thickness, and apparently carelessly put together, but for all that, owing to the fineness of the materials used, it is a pretty firm and compact nest. It is not easy to express it in words, but still this nest differs very considerably in appearance from the nests of any of the true Bulbuls with which I am acquainted, and more approaches those of *Hypsipetes*.

Mr. Wait sends me the following note:—

"This bird, although very common on the Nilghiris at elevations of from 4,000 to 5,000 feet, is a very shy nester, and its nest, which is not easily found, is, as far as my experience goes, invariably placed in the top of young thin saplings at heights of from 6 to 10 feet from the ground. The saplings chosen are almost always in thick cover near the edge of dry water-courses. They generally lay during May, but I have found nests in March. In shape the nest is a moderately deep cup, nearly hemispherical, with an internal diameter of from 2·5 to 3 inches: a true Bulbul's nest composed of grass and bents and lined with finer grasses. The nest is always suspended by the outer rim between two lateral branches, and never, I believe, built in a fork as is so common in the case of many other Bulbuls. They lay only two eggs, and never, I believe, more. The eggs are longish ovals, rather pointed at one end, a dull white or reddish white, more or less thickly speckled and spotted, or clouded with pale yellowish or reddish brown; occasionally the eggs exhibit a few very fine black lines."

Miss Cockburn, writing from Kotagherry, says: "The Yellow-browed Bulbul is common on the less elevated slopes of the Nilghiris, where it is often seen feeding upon guavas, loquots, pears, peaches, &c. They lay generally in April and May.

"Their nests are constructed very much like the common Bulbuls, except that, instead of being placed in the forked branches of trees, they are suspended between two twigs, and fastened to them by cobwebs, the inside being neatly lined with fine grass. Two nests of this bird were found, each containing two fresh eggs, of a pretty pinkish salmon colour, with a dark ring at the thick end; but another nest had three nearly *white* eggs! The whole structure of the nests were slight and thin, and the eggs could be plainly seen through. The notes of the Yellow-browed Bulbul are loud and repeated often."

The eggs of this species sent to me by Mr. Wait from Coonoor are totally unlike any other egg of this family with which I am acquainted. They remind one more of the eggs of *Eumyias melanops* or one of the *Niltavas* than anything else. The eggs are moderately long and rather perfect ovals, almost devoid of gloss, and with a dull white or pinkish white ground, speckled more or less thickly over the whole surface of the egg with rather pale brownish red or pink. The specklings becoming confluent at the large end, where they form a dull irregular mottled cap. Other specimens received from Miss Cockburn from Kotagherry exhibit the same general characters, but the majority of them are considerably elongated eggs approaching, so far as shape is concerned, the *Hypsipetes* type; in some eggs only the faintest trace of pale pinkish mottling towards the large end is observable; in others, the whole surface of the egg is thickly freckled and mottled all over, but most densely at the large end, with salmon pink or pale pinkish brown.

In length the eggs vary from 0·9 to 1·03, and in breadth from 0·64 to 0·7.

451.—*Criniger flaveolus, Gould.*

A nest of this species sent me from Darjeeling was found in July at an elevation of about 3,000 feet.

It was placed on the branches of a medium sized tree, at a height of only about 5 feet from the ground.

The nest was a compact, rather shallow, saucer, 5·5 inches in diameter and about 2 inches in height externally. The cavity was about 3·5 in diameter and an inch in depth. The greater portion of the nest was composed of dead leaves bound together firmly by fine brown roots; inside the leaves was first a lining of rather coarser brown roots, and again an inner lining of black horse-hair-like roots and fine stems of the Maiden-hair Fern.

The nest contained three fresh eggs. These eggs vary from broad to somewhat elongated ovals, are more or less pointed towards the small end, and exhibit a fine gloss.

The ground is a beautiful salmon pink, and it is thinly spotted, blotched, and marked with irregular lines of deep maroon red. Most of the markings in one egg are gathered into a very irregular straggling zone round the large end, and the other egg exhibits a tendency to form a similar zone. Besides these primary markings a few spots and clouds of dull purple, looking as if beneath the surface of the shell, are thinly scattered about the egg, chiefly in the neighbourhood of the zone

These eggs vary from 0·9 to 1·0 in length, and from 0·7 to 0·72 in breadth.

452.—*Ixos luteolus, Less.*

Common as is the White-browed Bush Bulbul in Midnapoor, throughout the Tributary Mehals, along the Eastern Ghâts, and again, it appears, in Bombay, only two of my correspondents appear as yet to have procured the nest or eggs.

Mr. Benjamin Aitken, writing from Bombay under date the 11th June, says: "I now send you a nest of *Ixos luteolus* with two eggs. I took it this morning from a thickly foliaged tree in a garden. It was placed on the top of the main stem of the tree which had been abruptly cut off about 5 feet from the ground, where the stem was about 3 inches thick. The nest was begun this day week, Thursday, and the first egg was laid the day before yesterday, (Tuesday). The bird is a very common one in gardens in Bombay, though I never saw it in Berar nor even in Poona. They build in situations similar to, but perhaps rather more sheltered than, those chosen by the Common Bulbul, but I remember finding one nest placed at a height of only 2 feet from the ground.

"This present nest was begun, as already mentioned, last Thursday, just two days after the first severe thunder-shower preliminary to the monsoon; now fairly on us.

"I draw your attention to the manner in which the nest has been tied at *one* place to a twig to prevent its being blown off its very (apparently) insecure site. I was obliged to take the nest, as I am leaving at once, otherwise one or perhaps two more eggs would have been laid."

The nest is a rather loose straggling structure, exteriorly composed of fine twigs. The cavity, hemispherical in shape, is carefully lined with fine grass stems. Outside it is very irregularly-shaped, and many of the twigs used are much too long and hang down several inches from the nest, but on one side the outer frame-work has been firmly tied with wool and a little cobweb to a live twig to which the leaves, now withered, are still attached. No roots or hair have entered into the composition of this nest.

Mr. E. Aitken writes: "I once found a nest in Bombay, not many feet above the level of the sea of course.

"The first egg was laid on 14th September. The nest was built in a bush on the edge of an inundated field, but in our garden. It was fixed to a thin waving branch underneath the bush, which completely overshadowed it. It was only 2 feet from the ground, a cup just large enough to hold the body of the bird, whose head and tail always projected over the edge; and it was made of thin twigs and neatly lined with *coir*. The bird laid two eggs and then deserted the nest. One of these, which I took, was thicker and rounder than a Bulbul's, and thickly spotted with claret-coloured spots, which gathered into a ring at the larger end.

"The eggs were laid on successive days. I think the birds had already had one brood (in another nest), for I saw apparently the same pair followed by a young one not long before."

Dr. Jerdon says: "I found the nest in my garden at Nellore. It was rather loosely made with roots, grass and hair, placed in a hedge, and the eggs, four in number, were reddish-white, with darker lake red spots exceedingly like those of the Common Bulbul."

The eggs answer well enough to Dr. Jerdon's description, but to an oologist's eye they are excessively *un-like* those of the Common Bulbul; shape, tone of colour and character of markings alike differ.

In shape they are decidedly elongated ovals. The shell is very fine and smooth, and they are moderately glossy. The ground is reddish-white, and this is profusely speckled and blotched (the blotches being chiefly confined, however, to a broad irregular zone round the broader end) with a deep, but certainly, I should say, *not* lake red, but much nearer what one would get by mixing brown with vermillion. Besides these red markings sundry clouds and spots of a pale greyish-lilac are intermingled in the zone, and one or two spots of the same colour may be traced elsewhere.

The eggs measure 0·92 by 0·62, and 0·97 by 0·63.

456.—*Pycnonotus flaviventris, Tick.*

This Black-crested Yellow Bulbul is another very common species of which I have as yet never seen either eggs or nest. All I know of its nidification is contained in the following brief note by Captain Bulger, which has appeared in the Ibis. He says: "I obtained several specimens, chiefly from the vicinity of the Great Rungeet River. From a thicket on the bank, near the cane-bridge, a nest was brought to me on the 16th May of the ordinary cup-shape, made of fibres and leaves, and containing three eggs, which my *shikaree* said belonged to this species. The eggs were of a dull pinkish hue, very thickly marked with small specks and blotches of brownish-crimson."

458.—*Otocompsa leucogenys, Gray.*

The White-cheeked Crested Bulbul breeds throughout the Himalayas, from Afghanistan to Bhootan, from April to July, and at all heights from 3,000 to 7,000 feet. The nest is a loose, slender fabric, externally composed of fine stems of some herbaceous plant and a few blades of grass, and internally lined with very fine hair-like grass. The nests may measure externally, at most, 4 inches in diameter, but the egg cavity, which is in proportion very large and deep, is fully 2¼ inches across by 1¾ inch deep. As I before said, the nest is usually very slightly and loosely put together, so that it is difficult to remove it without injury; but sometimes they are more substantial, and occasionally the cup is much shallower and wider than I have above described. Four is the full complement of eggs.

Captain Unwin says: "I found a nest containing three fresh eggs near the village of Jaskote, in the Agrore Valley, on the 24th April 1870. The nest was placed about 5 feet from the ground in a small wild Bēr tree in a watercourse. On the 7th May I found another nest placed in a small thick Cheer tree in the same valley, which contained four eggs."

From Murree Captain C. H. T. Marshall tells us that this species "breeds in the valleys, at about 4,000 or 5,000 feet up, in the end of June. Lays four eggs with a white ground, very thickly blotched with claret red; nest, roughly made of grass and roots, in low bushes."

About Simla and the valleys of the Sutlej and Beas I have found it common, and my experience of its nidification in these localities has been above recorded.

From Mussoorie Captain Hutton writes that it is "common in the Dhoon throughout the year, and in the hills during the summer. It breeds in April and May. The nest is neat and cup-shaped, placed in the forks of bushes or Pollard trees, and is composed externally of the dried stalks of 'Forget-me-not,' lined with fine grass stalks; eggs, three to four, rosy or faint purplish-white, thickly sprinkled with specks and spots of darker rufescent purple or claret colour; sometimes the outside of the nest is composed of fine dried stalks of woody plants, whose roughness causes them to adhere together."

Mr. W. E. Brooks remarks: "I found this bird common at Almorah, and procured several nests. They were placed in a bush or small tree, and were slightly composed of fine grass, roots, and fibres; eggs, three; ground colour, purplish-white, speckled all over, most densely at the larger end, with spots and blotches of purple-brown and purplish-grey; laying in Kumaon from the beginning of May to June."

The eggs are of the regular *Bulbul* type, as exemplified in those (more fully described below) of *Molpastes pusillus,* and vary much in colour, size, and shape. Typically they are rather a long oval, somewhat pointed at one end, have a pinkish or reddish white ground with little or no gloss, and are thickly speckled, freckled, streaked or blotched, as the case may be, with blood-, brownish-, or purplish-, red, &c., and here and there, chiefly towards the large end, exhibit, besides these primary markings, tiny underlying spots and clouds of pale inky purple. Some eggs have a pretty well-marked zone or irregular cap at the large end, but this is not very common. In size they average somewhat larger than those of *Otocompsa leucotis* and *emeria,* both of which they closely resemble; but they are smaller, and as a body less richly coloured than those of *Otocompsa fuscicaudata.* They vary in length from 0·82 to 0·95, and from 0·58 to 0·7 in breadth; but the average of fifty-seven specimens measured was 0·88 by 0·65.

459.—*Otocompsa leucotis, Gould.*

The White-eared Crested Bulbul is, so far as my experience goes, entirely a Western Indian form. In the cold weather it may be met with at Agra, Cawnpoor, and even Jhansi, Saugor and Hoshungabad, but during the summer months I only know of its occurring in Cutch, Katywar, Sindh, Rajpootana, and the Punjab. In all these localities it breeds, laying for the most part in July and August in the Punjab, but somewhat earlier in Sindh. I have, even in Rajpootana, seen eggs towards the end of May, but this is the exception.

The nests are usually in dense and thorny bushes—Acacias, Catechu, and Jhand *(Prosopis spicigna)*—and are placed at heights of from 4 to 6 feet from the ground. The Customs hedge is a great place for their nests, but I have noticed that they are partial to bushes in the immediate neighbourhood of water, and at Hansie, whence he sent me many nests and eggs, Mr. W. Blewitt always found them either in the fort ditch or along the banks of the canal.

The nests, which very much resemble those of *Molpastes pusillus,* are usually composed of very fine dry twigs of some herbaceous plant, intermingled with vegetable fibre resembling tow, and scantily lined with very fine grass roots. They are rather slender structures, shallow cups measuring internally from 2½ to 3 inches in diameter, and a little more than 1 inch in depth. Three was the largest number of eggs I ever found in any nest, and several sets were fully incubated.

Mr. W. Theobald makes the following note on the nidification of this bird in the neighbourhood of Pind Dadan Khan and Katas in the Salt-range: "Lay in May, June, and July; eggs, four; shape, ovato pyriform; size, 0·91 inches by 0·64 inches; color, white, much dotted with claret-red; nest, a neat cup of vegetable fibres in bushes."

The eggs, which I need not here describe in detail, are precisely similar to, but as a body slightly smaller than, those of *Otocompsa leucogenys.* The only point of difference that I seem to notice, and this might disappear with a larger series before me, is that there is a rather greater tendency in the eggs of this species to exhibit a zone or cap. In length they vary from 0·75 to 0·9, and in breadth from 0·52 to 0·68; but the average of 23 eggs measured was 0·83 barely, by 0·64.

460.—*Otocompsa emeria*, *Shaw.*

Mr. Gray separates *pyrrhotis* Hodgson from this present species; but I am satisfied that the Bengal birds from Calcutta upwards are identical with those from Nepal and Oudh, and the species must I consider stand under Shaw's name, unless indeed the Chinese *jocosa* should prove identical.

The Bengal Red-whiskered Bulbul breeds from March to the end of May. Its nest is placed, according to my experience in Lower Bengal, in any thick bush, clump of grass, or knot of creepers; sometimes in the immediate proximity of native villages, or in the gardens of Europeans, and sometimes quite away in the jungle. It is a typical Bulbul nest, a broad shallow saucer, compactly put together with twigs of herbaceous plants, amongst which, especially towards the base, a few dry leaves are incorporated, and lined with roots or fine grass. Exteriorly a little cobweb is wound on to keep twigs and leaves firm and in their places. All the nests that I have seen were tolerably near the ground, at heights varying from 3 to 5 feet.

Three is the normal number of the eggs, but only the other day we obtained one containing four.

Mr. R. M. Adam says: "This bird is very common in Oudh. It affects gardens and low scrub jungle, flying about with a jerky flight from bush to bush. They are very fond of the fruit of the Burgot tree *(F. indica)*, and may be seen in great numbers about these trees when the fruit is ripe. Their note is something like that of the common Bulbul, but livelier and louder. I have seen a number of this year's young birds, well grown, but as yet without the red cheek tuft.

"They build in clumps of Moong grass about 2 to 3 feet from the ground. One I found in the tendrils of a creeper about 20 feet from the ground. The nest is well fixed in the grass and fastened to it by the intertwining of some of the fibres of which it is composed. It is cup-shaped, and measures 4 inches in diameter, about 0·75 in thickness, with an egg cavity 2·75 diameter and 1·5 deep.

"The nest is formed of roots, twigs, and grass loosely worked together, and over the exterior with the view of binding the mass together, dried or skeleton leaves, pieces of cloth, broad pieces of grass and plaintain bark, are fastened carelessly on by means of cobwebs and the silk from cocoons. The egg cavity is lined with fine roots.

"I have never found more than three eggs; on several occasions only two."

I do not think it possible to separate the Andaman bird. Of its nidification in those islands Mr. Davison says: "I found a nest of this species in April near Port Blair, in a low Mangrove bush growing quite at the edge of the water; it (the nest) was cup-shaped and composed of roots, dried leaves, and small pieces of bark, lined with fine roots and cocoa-nut fibres; it contained three eggs with a pinkish-white ground thickly mottled and blotched with purplish-red, the spots coalescing at the thicker end to form a zone."

The eggs in size, colour, and shape closely resemble those of *Otocompsa leucotis.* All that I have said in regard to these latter is applicable to those of the present species, and, so far as varieties of coloration go, the description of the eggs of *Otocompsa leucogenys* is equally applicable to those of the present species. If any distinction can be drawn, it is that, as a body, bold blotches of rich red and pale purple are more commonly exhibited in the eggs of this species than in those of either of the preceding ones.

In length the eggs vary from 0·8 to 0·9, and in breadth from 0·58 to 0·7, but the average of 27 eggs was 0·83 nearly, by 0·63 barely.

460 *bis.—Otocompsa fuscicaudata, Gould.*

The Southern* Red-whiskered Bulbul is found throughout the more hilly, and more or less elevated, tracts of the peninsular, from Cape Comorin northwards as far as Mount Aboo on the west, and the Eastern Ghâts, above Nellore, on the east. How far northwards it extends in the centre of the peninsular I am not certain, but I have seen a specimen from the Satpooras.

They breed any time from the beginning of February to the end of May. Their nests are usually placed at no great height from the ground (say at from 2 to 6 feet) in some thick bush.

The nests of this species that I procured at Mount Aboo, and which have been sent me by Mr. Carter both from Coonoor and Salem, and by other friends from other parts of the Nilghiris, where the bird is excessively common, very much resemble those of *O. emeria,* but they are somewhat neater and more substantial in structure. They differ a good deal in size and shape, as the nests of Bulbuls are wont to do. Some are rather broad and shallow, with egg cavities measuring 3¼ inches across, and perhaps 1 inch in depth, while others are deeper and more cup-shaped, the cavity measuring only 2½ inches across and fully 1½ inch in depth. They are composed in some cases almost wholly of grass roots, in others of very fine twigs of the Furash (*Tamarix furas*), in others again of rather fine grass, and all have a quantity of dead leaves or dry ferns worked into the bottom of the nest, and all are lined with either very fine grass or very fine grass roots. The external diameter averages about 4½ inches, but some stand fully 3 inches high, while others are not above 2 inches in height. As might be expected, the White-cheeked and White-eared, and the two Red-whiskered Bulbul's types of architecture, differ considerably; *inter se,* the nests of *leucotis* and *leucogenys* differ just sufficiently to render it generally possible to separate them, and the same may be said of the nests of *emeria* and *fuscocaudata.* But there is a very wide difference between the nests of the two former and the two latter species, so that it would be scarcely possible to mistake a nest belonging to the one group for that of the other. The incorporation of a quantity of dead leaves in the body of the nests, reminding one much of those of the English Nightingale, is characteristic of the Red-whiskered Bulbul, and is scarcely to be met with in those of the White-cheeked or White-eared ones. In *Molpastes* leaves are occasionally, but more rarely and sparingly, used.

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* The Southern differs from the Bengal Red-whiskered Bulbul in entirely wanting the broad white tippings to the lateral tail feathers that characterise the latter. I have seen *no* intermediate forms.

Mr. H. R. P. Carter says: "At Coonoor on the Nilghiris I have found the nests from the 13th March to the 22nd April, but I believe they commence laying in February. They are generally placed in coffee bushes and low shrubs, as a rule in a fork, but I have frequently found them suspended between the twigs of a bush which had no fork. I have also found the nest of this bird in the thatch of the eaves of a deserted bungalow, and in tufts of grass on the edge of a cutting overhanging the public road.

"The nest is cup-shaped, rather loosely constructed outside but closely and neatly finished inside. The outside is nearly always fern leaves at the bottom, coarse grass and fibres above, and lined inside either with fine fibres or fine grass.

"I have never found more than two eggs, and I have taken great numbers of nests; but I am told that three in a nest is not uncommon."

Writing from Kotagherry Miss Cockburn says: "Our Red-whiskered Bulbul builds a cup-shaped nest in any thick bush. The foundation is generally laid with pieces of dry leaves and fern, after which small sticks are added and the whole neatly finished with a lining of fine grass. They lay two (sometimes three) very prettily spotted eggs of different shades of red and white, which are found in February, March, and April."

Mr. Wait remarks: "This bird breeds at Coonoor from February to June. It builds usually in isolated bushes and shrubs, in gardens and open jungle. The nest is cup-shaped, loosely but strongly built of grass bents, rooty fibres and thin stalks, and is lined with finer grass stems and roots. I think the internal diameter averages about 2½ inches, and about an inch in depth; but they vary a good deal in size. They lay two or three eggs, rarely four; and the eggs vary a good deal in shape and size, being sometimes very round and sometimes comparatively long ovals. The birds swarm on our coffee estates, and breed freely in the coffee bushes."

Dr. Jerdon says: "I have frequently had its nest and eggs brought me on the Nilghiris. The nest was very neatly made, deep, cup-shaped, of moss lichens and small roots, lined with hair and down. The eggs are barely distinguishable from those of the next bird, being reddish-white with spots of purplish or lake red all over, larger at the thick end."

But Dr. Jerdon rarely took nests with his own hand, and in this case clearly wrong nests must have been brought to him.

From Trevandrum Mr. F. Bourdillon says: "It lays three or four eggs of a pale pink colour, with purple spots, in a nest of roots, lined with finer roots and interwoven with the leaves of a jungle shrub gathered green. The nest, 3 inches in diameter and 2 inches deep, is generally situated in a bush 4 or 5 feet from the ground."

The numerous eggs of this species that I possess, though truly Bulbul-like in character, all belong to one single type of that form. Almost all have a dull pinkish or reddish white ground, very thickly freckled, mottled, and streaked all over with a rich red; in most blood red, in the others brick red, underneath which, when closely looked into, a small number of pale inky purple spots are visible. In half the number of the eggs the markings are much densest at the large end; these eggs are one and all more brightly and intensely coloured than any of those that I possess of the other three species of *Otocompsa*. They are, moreover, larger than any of these.

In length they vary from 0·82 to 0·97, and in breadth from 0·63 to 0·71; but the average of thirty-six eggs measured was 0·9 by 0·66.

461.—*Molpastes pygmæus*, Hodgs.

These Bulbuls are most troublesome; there are half-a-dozen races of them, and it is impossible to decide which ought to be dignified as species and which retained merely as races. I am not myself inclined to admit more than two species, and I think it doubtful whether even these should not be "lumped." The typical forms of each are distinct enough, but between these every intermediate link occurs, and I have seen hundreds of birds in regard to which it was a mere toss up whether they should be classed as *pygmæus* or as *pusillus*. These intermediate birds would for the most part go under *intermedius*, Hay, but then it becomes absolutely impossible to lay down any single characteristic by which *intermedius* shall be certainly distinguished from either of the other two species.

Taking, however, the Common Bengal Bulbul as the larger form with the conspicuous brown ear coverts and the black of the occiput and nape not ending abruptly but running down on to the upper back, and as occurring throughout the Himalayas (I mean of course the lower ranges south of the first snowy range), the Terais, Dhoons and Doars, Lower Bengal and Assam, it may be said to breed from the middle of April up to the end of June.

I have taken many nests in many localities, and while the birds vary, getting less typical as you go westwards, the nests are all pretty much the same, though the eastern birds go in rather more for dead leaves than the western. Sikhim birds are very typical, and I will, therefore, confine myself to quoting a note I made there.

Several nests taken at Darjeeling in June, at elevations of from 2,000 to 4,000 feet, each contained three or four, more or less incubated, eggs. The nests were mostly very compact and rather deep cups, about 3½ inches in diameter and 2 inches in height, very firmly woven of moss and grass roots, but with a certain quantity of dry and dead leaves (more than is seen in Simla nests), and here and there a little cobweb worked into the outer surface. Sometimes a little fine grass was used as a lining; but generally there was no lining, only the roots that were used in finishing off the interior of the nests were rather finer than those employed elsewhere. The egg cavity is very large for the size of the nest, the sides, though very firm and compact, being scarcely above half an inch in thickness. The nests differ very much in appearance, owing to the fact that in some all the roots used are black, in others pale brown.

Mr. Gammie says: "I took two or three nests of this species in the latter half of May at Mongpho, in Sikhim, at elevations of 3,500 feet or thereabouts. They contained three eggs each, hard-set. The nests were in trees, at a moderate height, and rather flimsy structures; shallow cups, composed externally of fine twigs and vegetable fibre, with generally some dead leaves intermingled, especially towards their basal portions, and lined with the fine hair-like stem portion of the flowering tops of grass. One nest measured internally 2½ inches in diameter by nearly 1½ inch in depth; externally it was nearly 4 inches in diameter and 2 inches in height. The eggs were of the usual type."

From Mussoorie Captain Hutton remarks: "This is more properly a Dhoon species, as although it does ascend the hills, it is represented there to a great extent by *P. leucogenys*. It breeds in April, May, and June, constructing its nest in some thick bush. On the 12th May one nest contained three eggs of a rosy-white, thickly irrorated and blotched with purple or deep claret colour, and at the larger end confluently stained with dull purple, appearing as if beneath the shell. The nest is small and cup-shaped, composed of fine roots, dry grasses, flower-stalks, chiefly of Forget-me-not, and a few dead leaves occasionally interwoven; in some the outside is also smeared over here and there with cobwebs and silky seed down; the lining is usually of very fine roots. Some nests have four eggs, which are liable to great variation both in the intensity of colouring and in the size and number of spots."

From Murree Captain C. H. T. Marshall writes: "This Bulbul breeds in large numbers in the lower hills," but these Murree birds, like our Simla ones, are only half-bred fellows and not typical *pygmæus*."

Of the somewhat intermediate race (not *nigropileus*, Blyth,) that occurs in Upper Pegu, Mr. Eugene Oates writes: "On the 29th July I found a nest in the extremity of a bamboo frond forming one of a large clump near my house at Boulay. It was circular, the internal diameter about 2·5 and the external 4 inches; the depth inside 1·5, and the total height 2·5. Foundation of dead leaves, the bulk of the nest coarse grass and small roots, and the interior of much finer grass carefully curved to shape. Altogether the nest was a very pretty structure. Two eggs measured 0·9 by 0·62 and 0·65. Another nest found at the same time was placed in a small shrub about 4 feet from the ground. It was very similar in construction and size to the above and contained three eggs."

I have fully described the leading types of the eggs of the true *Bulbuls* under *Molpastes pusillus*. I shall, therefore, only here say that the eggs of this species in shape and colour exactly resemble those of its congener, but that as a body they are larger in size: every variety observable in the eggs of the one is, as far as I know, to be met with amongst those of the other. Taking only the eggs of typical birds from Lower Bengal and Sikhim, they vary from 0·88 to 1·05 in length and from 0·67 to 0·75 in breadth; but, as with the birds, so with the eggs, every intermediate grade is to be found, and I have *pygmæus* eggs, or at any rate eggs of the bird that there does duty for *pygmæus*, from Simla and westward that are not perceptibly larger than those of typical *pusillus* from Madras.

462.—*Molpastes pusillus*,* *Blyth.*

The Common Madras Bulbul, which by the way extends northwards throughout the Central Provinces, Chota-Nagpoor, Rajpootana (the eastern portions), the plains of the North-Western Provinces, Oudh, the Punjab and Behar, breeds in the plains country chiefly in June and July, although a few eggs *may* also be found in April, May, and August. In the Nilghiris the breeding season is from February to April, both months included.

Elsewhere I have recorded the following notes on the nidification of this species in the neighbourhood of Bareilly:—

"Close to the tank is a thick clump of Sâl trees *(Shorea robusta)*, the great building timber of northern India, whose natural home is in that vast sub-Himalayan belt of forests which passes only 30 miles to the north of Bareilly.

"In one of these a Common Madras Bulbul had made its home. The nest was compact and rather massive, built at a fork, on and round a small twig. Externally it was composed of the stems (with the leaves and flowers still on them) of a tiny, Groundsell-like (*Senecio*), asteraceous plant, amongst which were mingled a number of quite dead and skeleton leaves and a few blades of dry grass: inside, rather coarse grass was lightly woven into a lining for the cavity, which was deep, being about 2 inches in depth by 3 inches in diameter.

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* Mr. Gray identifies this species with *chrysorrhoides, Lafresn.*, but this is surely the Chinese bird, which in parts of Tenasserim, replaces *nigropileus, Blyth*, and which is quite distinct from *pusillus*.

"This is the common type of nest, but half an hour later, and scarcely 100 yards further on, we took another nest of this same species. This one was built in a mango tree, towards the extremity of one of the branches, where it divided into four upright twigs, between which the Bulbul had firmly planted his dwelling. Externally it was as usual chiefly composed of the withered stems of the little asteraceous plant, interwoven with a few Jhow shoots (*Tamarix dioica*) and a little tow-like fibre of the Putsan (*Hibiscus canabinus*), while a good deal of cobweb was applied externally here and there. The interior was lined with excessively fine stems of some herbaceous exogenous plant, and there did not appear to be a single dead leaf or a single particle of grass in the whole nest.

"The eggs, however, in both nests, three in each, closely resembled each other, being of a delicate pink ground, with reddish-brown and purplish-grey spots and blotches nearly equally distributed over the whole surface of the egg, the reddish-brown in places becoming almost a maroon-red. Two eggs, however, that we took out of a nest, similar to the first in structure but situated like the second in a Mango tree, were of a somewhat different character and very different in tint. The ground was dingy reddish-pink, and the whole of the egg was thickly mottled all over with very deep blood-red, the mottlings being so thick at the large end as to form an almost perfectly confluent cap. Altogether the colouring of these two eggs (*si licit minores*) reminded one of richly coloured types of *Neophron's* eggs. Some of the Bulbul's eggs that we have taken earlier in the season were much feebler coloured than any of those obtained to-day, and presented a very different appearance with a pinkish-white ground and only moderately thickly but very uniformly speckled all over with small spots of light purplish-grey, light reddish-brown, and very dark brown. These eggs scarcely seem to belong to the same bird as the boldly blotched and richly mottled specimens that we have taken to-day."

Writing from the neighbourhood of Delhi Mr. F. R. Blewitt says: "This Bulbul breeds from the middle of May to about the middle of August. Its selection of a tree for its nest is arbitrary, as I have found the latter on almost every variety of bush and tree. The nest is neatly cup-shaped, generally fragile in structure, though I have seen many a nest strong and compact. The outer diameter of the nests varies from 3 to nearly 4 inches, and the inner diameter from 2 to almost 3 inches.

"The chief material of the nest is, on the outside, coarse grass, with fine *khus* or fine grass for the lining. Very frequently horse hair is likewise used for lining the interior of the cavity.

"I have seen some nests bound round on the outside with hemp, other kinds of vegetable fibres, and even spiders' webs.

"The regular number of the eggs is four."

All my specimens from the salt range belong to this species, and not to *pygmæus*, so that Mr. W. Theobald's remarks in regard to the Common Bulbul's nidification about Pind Dadan Khan and the salt range must refer to this species. He says:—

"Lay in May, June, and July; eggs, four; shape, blunt ovato pyriform; size, 0·87 by 0·62; colour, deep pink, blotched with deep claret-red; nest, a neat cup of vegetable fibres in bushes."

He also found the present species breeding in Monghyr in the fourth week of June. The late Captain Beavan remarked that this species "appears to replace the former in the jungles of Manbhoom and breeds there. The nest is similar to that of its congener, but the eggs appear to be darker in colour."

Mr. Nunn remarks: "I took a nest of this species at Hoshungabad on the 26th June 1868, which contained four eggs; it was placed in a Lime tree, was composed of very small twigs, and lined inside with fine grass-roots; it was cup-shaped, and measured internally 2·25 in breadth by 1·75 in depth.

Mr. A. Anderson writes from Futtehgurh: "On the 30th April last (1874) I took a very beautifully and curiously constructed nest of our Common Bulbul. In shape and size it resembled the ordinary nest, but the curious part of it was that the upper portion of the nest for an inch all round was composed entirely of *green twigs* of the Neem tree on which it was built, and the under surface (below) was felted with fresh blossoms belonging to the same tree. The green twigs had evidently been broken off by the birds, but the flowers were picked up from off the ground where they were lying thick."

Writing fron the Nilghiris Miss Cockburn says that "the nests, which in shape closely resemble those of the Southern Red-whiskered Bulbul, are composed chiefly of grass. The eggs are three in number, and may occasionally be found in any month of the year, though most plentiful during February, March, and April."

Dr. Jerdon, whose experience of this species had been gained mainly in Madras, states that "it breeds from June to September, according to the locality. The nest is rather neat, cup-shaped, made of roots and grass, lined with hair, fibres, and spiders' webs,* placed at no great height in a shrub or hedge. The eggs are pale pinkish, with spots of darker lake red, most crowded at the thick end. Burgess describes them as a rich madder colour, spotted and blotched with grey and madder-brown: Layard as pale cream, with darker markings."

In shape the eggs are typically rather long ovals, slightly compressed or pointed towards the small end. Some are a good deal pointed and elongated; a few are tolerably perfect broad ovals, and abnormal shapes are not very uncommon. The ground is universally pinkish or reddish white (in old eggs which have been kept a long time a sort of dull French white), of which more or less is seen according to the extent of the markings. These markings take almost every conceivable form, defined and undefined—specks, spots, blotches, streaks, smudges, and clouds; their combinations are as varied as their colours, which embrace every shade of red, brownish and purplish red. As a rule, besides the primary markings, feeble secondary markings of pale inky purple are exhibited, often only perceptible when the egg is closely examined, sometimes so numerous as to give the ground colour of the egg a universal purple tint. In about half the eggs there is a tendency to exhibit, more or less, an irregular zone or cap at the large end, but solitary eggs occur in which there is a cap at the little end. Three pretty well marked types may be separately described. First, an egg thickly mottled and streaked all over with deep blood-red, which is entirely confluent over one-third of the surface, namely, at the large end, and leaves less than a third of the ground colour visible as a paler mottling over the rest of the surface. Then there is another type with a very delicate pure pink ground, and with a few large, bold, deep red blotches, chiefly at the large end, where they are intermingled with a few small pale inky purple clouds, and with only a few spots and specks of the former colour scattered over the rest of the surface. Lastly, there is the pale dingy pink ground, speckled almost uniformly, but only moderately thickly, over the whole surface, with minute specks and spots of blood-red and pale inky purple.

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* This is some *lapsus pennæ*. Spiders' webs are sometimes used exteriorly, never as a lining.

The dimensions are excessively variable. In length the eggs vary from 0·7 to 1·02, and in breadth from 0·6 to 0·72 (and that though all these belonged to birds which, if not *all*, typical *pusillus*, were at any rate nearer to this than to *intermedius* even, let alone *pygmæus*) ; but the average of sixty eggs measured was 0·89 by 0·65.

463.—*Phyllornis Jerdoni, Blyth.*

I have never myself found the nest of Jerdon's Green Bulbul, but my friend, Mr. F. R. Blewitt, has sent me numerous specimens of both nests and eggs from Raipoor and its neighbourhood.

In that part of the country, July and August appear to be the months in which it lays; but elsewhere its eggs have been taken in April, May, and June, so that its breeding season is much the same as that of the Bulbuls of which we have already treated. The nest is a small rather shallow cup, at most, 3½ inches in diameter and 1½ in depth; is composed externally entirely of soft tow-like vegetable fibre, which appears to be worked over a light frame-work of fine roots and slender tamarisk stems, amongst which some little pieces of lichen are intermingled. There is no attempt at a lining, the eggs being laid on the fine grass and slender twigs (about the thickness of an ordinary sized pin) which compose the framework of the nest.

The eggs as a rule appear to be two in number.

Mr. Blewitt remarks: "The Green Bulbul breeds in July and August. The bird does not preferentially select any one description of tree for its nest, though the greater number secured were taken from Mowah trees (*Bassia latifolia*). The nest is generally firmly affixed at the fork of the end twigs of an upper branch from 15 to 25 feet from the ground. Sometimes, however, eschewing twigs, the bird constructs its nest on the *top* of the main branch itself, cunningly securing it with the material to the rough exterior surface of the branch. Three is certainly the maximum number of eggs. During the period of nidification the parent birds are very watchful and noisy, and their alarm and over anxiety on the near approach of a stranger often betrays the nest."

The late Captain Beavan recorded the following interesting note in regard to this species :—

"This handsome bird is very abundant in Manbhoom, where it is called "Hurrooa" by the natives. Its note is so much like that of *Dicrurus macrocercus* that I have frequently been deceived by the resemblance. It breeds in the district. A nest with two eggs was brought to me at Beerachalee on April 4th, 1865. It is built at the fork of a bough and neatly suspended from it, like a hammock, by silky fibres, which are firmly fixed to the two sprigs of the fork, and also form part of the bottom and outside of the nest. The inside is lined with dried bents and hairs. The eggs (creamy white with a few light pinky-brown spots) are rather elongated, measuring 0·85 by 0·62. Interior diameter of nest, 2·25; depth, 1·5. The cry of alarm of this species is like that of *Parus major*."

Dr. Jerdon remarked (ILLUSTRATIONS OF INDIAN ORNITHOLOGY), writing at the time from Southern India:—

"I have seen a nest of this species in the possession of S. N. Ward, Esq. It is a neat but slightly cup-shaped nest, composed chiefly of fine grass, and was placed near the extremity of a branch, some of the nearest leaves being, it was said, brought down and loosely surrounding it. It contained two eggs, white, with a few claret coloured blotches. Its nest and eggs, I may remark, show an analogy to that of the Orioles."

Mr. Layard tells us that this species is "extremely common in the south of Ceylon, but rare towards the north. It feeds in small flocks on seeds and insects, and builds an open cup-shaped nest. The eggs, four in number, are white, thickly mottled at the obtuse end with purplish spots."

And Sir W. Jardine says: "For the interesting nest and eggs of *Phyllornis Jerdoni*, Blyth, we are indebted to E. S. Layard, Esq., Magistrate of the district of Point Pedro (the northernmost extremity of Ceylon), in which district we understand it to have been procured. A large groove along the under side of the nest indicates it to have been placed upon a branch; the general form is somewhat flat, and it is composed of very soft materials, chiefly dry grass and silky vegetable fibres, rather compactly interwoven with some pieces of dead leaf and bark on the outside, over which a good deal of spider's web has been worked. It contains four eggs, white, abruptly speckled over with dark bister mingled with some ashy spots." Layard is not generally reliable where eggs are concerned, for he did not usually take them with his own hands and natives *will* lie; and I doubt the *four* eggs here, but I think, so far as the nest goes, that he was right in this case.

The eggs are rather elongated ovals; some of them a good deal pointed towards one end, others again slightly pyriform. The shell is very delicate; the ground colour white to creamy white; as a rule almost glossless; in some specimens slightly glossy. They are sparingly marked, usually chiefly at the large end, with spots, specks, small blotches, hair lines, or hieroglyphic-like figures, which are typically almost black, but which in some eggs are blackish-, or even reddish-, or purplish-,brown. In no specimens that I have seen were the markings at all numerous, except just at the large end; and in some they consist solely of a few tiny specks, scattered about the crown of the egg.

The eggs vary from 0·8 to 0·92 in length, and from 0·56 to 0·63 in breadth; but the average of a dozen was 0·86 by 0·6.

467 & 468.—*Ægithina tiphia, Lin.*

I have already on several occasions (see specially STRAY FEATHERS, 1874, Vol. II, p. 459) recorded my present inability to distinguish as distinct species *typhia* and *zeylonica*. I am quite open to conviction, but believing them so far as my present investigations go to be inseparable, I propose to treat them as a single species in the present notice.

The Common Iora (the genus, though possibly nearly allied, is too distinct from *Phyllornis* to allow me to adopt, as Jerdon does, one common trivial name, "Green Bulbul," for both) breeds in different localities from May to September. I have taken nests and eggs of typical examples of both supposed species, and have had them sent me with the parent birds by many correspondents, and though both vary a good deal, I am convinced that all the variations which occur in the nests and eggs of one race occur also in those of the other. If one gets only two or three clutches of the eggs of each, great differences, naturally attributed to difference of species (see Captain Cock's remarks, *infra*), may be detected; but I have seen more than fifty, and, so far as I am concerned, I have no hesitation in asserting that, as in the case of the birds so in that of their nests and eggs, no constant differences can be detected if only sufficiently large series are compared.

The birds build usually on the upper surface of an horizontal bough, at a height of from 10 to 25 feet from the ground. Sometimes, when the bough is more or less slanting, the nest assumes somewhat more of a pocket shape. Occasionally it is built between three or four slender twigs, forming an upright fork; but this is quite exceptional.

As a rule nests of the Iora very closely resemble those of *Leucocirca*, so much so that when I sent a beautiful photograph of a nest, which I had myself watched building, of the latter species to Mr. Blyth, he unhesitatingly pronounced it to be a nest of the former. There is, however, a certain amount of difference; the Iora nests are looser and somewhat less compact and firm. My experience does not confirm Mr Brooks' remarks (*vide infra*) that they are usually shallower: on the contrary all those now before me are, as indeed all the many I can remember to have seen were, deep, thin-walled cups, which had been placed on more or less horizontal branches, not uncommonly where some upright growing twig afforded the nest additional security. The egg cavity averages about 2 inches in diameter, and varies from an inch to 1¼ inch in depth; the walls, composed of vegetable fibres, and varying in different specimens from only one-eighth to three-eighths of an inch in thickness, are everywhere thickly coated externally with cobwebs, by which also the nest is firmly attached to the branch on which it is seated, as well as, where such adjoin the nest, to any little twig springing from that branch. Interiorly they are more or less neatly lined with very fine grass stems. The bottom of the nest in its thinnest part is rarely above one-eighth of an inch in thickness, but running as it so often does down the curving sides of the branch, it becomes a good deal thicker, and where placed on a small branch, say not exceeding an inch in diameter, the lateral portions of the bottom of the nest are sometimes more than half an inch in thickness.

One nest which I obtained recently in the Botanical Gardens at Calcutta was built in an upright fork of four slender twigs, and in this case the bottom of the nest was obtusely conical, and at its deepest point may have been nearly an inch in depth. I have never seen a similar nest.

The eggs are normally three in number, but I have at times found only two, and these more or less incubated.

Mr. Brooks, writing of a nest he took in the Mirzapoor District, says: "Did you ever get particulars of the nest of *Iora zeylonica* on the forked branch of a mango tree 12 or 14 feet from the ground? Nest composed of the same materials as that of *Leucocirca albofrontata*, but not quite so neat and much more shallow; eggs, the size of those of *P. grisea* or a little larger, salmon-coloured and spotted with pale reddish-brown, intermixed with a few larger dashes of purple grey. The bird lays in July eggs three. This is the only nest I have not taken since I came to India the second time."

From Raipoor Mr. F. R. Blewitt remarks: "The Iora breeds from July to September, and certainly *not*, as Dr. Jerdon supposes, twice a year. Both birds assist in the building of the nest, and there evidently appears to be no choice for any particular kind of tree on which to build. I have found them indiscriminately on the Mango, Mowah, Neem, and other trees. The nest is invariably made either just above or between the fork of two outshooting slender horizontal branches. It is very neatly made, deeply cup-shaped, of grass and fibres, with spider's web on the exterior. The maximum number of eggs is three; they are of a pale whitish colour, marked generally, chiefly at the broad end, with brownish spots. The brown spots vary in size on different eggs. I secured the first eggs on the 12th July, and the last on the 2nd September. A pair of birds were on this last date just completing their nest, which unfortunately was destroyed by the heavy rains."

Captain Cock says; "*Iora tiphia* is tolerably common at Seetapoor (Oudh), and I have several times taken their nests and eggs. I may here mention that I have taken eggs of *Iora zeylonica* at Etawah, and that knowing the birds well I can say that it is quite a distinct bird; although in the marking of its eggs there is a slight resemblance, yet the nests of the two species are quite different. On the 13th May I observed a nest of *tiphia* on a young Mango tree, at the edge of a croquet-ground in our garden. I shot both male and female and took the eggs; the nest was placed on the upper side of a sloping bough, was covered outside with cobweb, and lined with thin dry grass. It contained two fresh eggs of a delicate pink colour, with broad irregularly-shaped dashes of light brown down the sides of the shell, not tending to coalesce in any way at either apex. Another pair also built their nest on the edge of the same ground in another tree, but unfortunately in a weak moment I pointed out the nest to a lady friend, and as thereafter no one ever played croquet on the ground without staring at the nest, the birds got disgusted and soon deserted it."

To this I need merely add that *of course* typical *tiphia* and typical *zeylonica* are very distinct, but that as every intermediate form occurs, they are not, according to my views of what constitutes a species, entitled to specific separation, and that as regards nests and eggs, according to my experience, every variety in the one is to be found in the other.

Dr. Jerdon, speaking of Southern India, says: "I have seen the nest and eggs on several occasions. The nest is deep, cup-shaped, very neatly made with grass, various fibres, hairs, and spiders' webs; and the eggs, two or three in number, are reddish-white, with numerous darker red spots chiefly at the thicker end. It breeds in the south of India in August and September; perhaps, however, twice a year."

Writing from South Wynaad Mr. J. Darling (Junior) says: "I found the nest, which with the eggs and both parents I have now sent you, in the Teriat Hills on the 24th May, at an elevation of about 2,300 feet. It was placed on, and near the extremity of, a bough, at a height of about 10 feet from the ground. It is round, about 2 inches in height and the same in diameter, and the cavity was about an inch or a trifle more in depth. It is built of grass and reed bamboo fibres, and is coated with spider's web. It only contained two eggs."

Both parents, (sexes ascertained by dissection,) are in the tipical *tiphia* plumage, without one particle of black on either head, nape, or back!

In shape the eggs are moderately broad ovals, slightly pointed towards one end. They vary however a good deal, some being much more elongated than others. They are almost entirely devoid of gloss. The ground colour is generally greyish-white, but some have creamy and some a salmon tinge; typically they have numerous long streaky pale brown or reddish-brown blotches, chiefly confined to the large end, where they often seem to spring from an irregular imperfect zone of the same colour. The colour of the blotches varies a good deal. In some it is a pale greyish or purplish brown; in others decidedly reddish, or even well marked and somewhat yellowish brown. Some pale, purplish streaks and clouds generally underlie the brown blotches where they are thickest, and there form a kind of nimbus. In some eggs the markings are confined to a narrow imperfect zone of pale purplish specks or very tiny blotches round the large end, and some of the eggs remind one of those of *Leucocirea albofrontata*. The peculiar streaky longitudinal character of the markings, almost wholly confined to the large end, best distinguishes the eggs of the Ioras from those of any other Indian bird with which they are likely to be confounded.

In length they vary from 0·63 to 0·76, and in breadth from 0·51 to 0·57; but the average of forty-seven eggs measured is 0·69, nearly, by a trifle more than 0·54.

469.—*Irena puella*, *Lath.*

Mr. F. Bourdillon favoured me with an egg of the Fairy Blue-bird, which with other rare eggs he obtained on the Assamboo Hills. So little is known of this range that I quote his remarks upon the locality.

"I must premise that the specimens were obtained along the Assamboo Range of hills, between the elevations of 1,500 and 3,000 feet above sea-level. This range of hills, running in a north-westerly and south-easterly direction from Cape Comorin to 8°33′ north latitude, forms the boundary line between Travancore and the British territory of Tinnevelly, the average height of the range being about 4,000 feet, while some of the peaks are as high as 5,500 feet. The general character of the hills is dense forest, broken here and there by grass ridges and crowned by precipitous rocks, above which lies an almost unexplored table-land, varying in width from a mile to 12 or 15 miles, at an elevation of almost 4,000 feet."

"The egg of the Fairy Blue-bird," he adds, "was taken slightly set on the 2nd February 1873 from a loose sparsely-built nest situated in a sapling about 12 feet from the ground. The nest was composed of dead twigs lined with leaves, and was about 4 inches broad and very slightly indented."

As will be remembered Dr. Jerdon states that Mr. Ward obtained, what he was informed was, the nest and eggs; the nest was large, made of roots and fibres and lined with moss; and the eggs, two in number, were pale greenish, much spotted with dusky," and I have no doubt that Mr. Ward's eggs were genuine.

The egg is an elongated oval, compressed almost throughout its entire length, very blunt at both points; a long cone, the apex broadly truncated and rounded off obtusely, seated on half a very oblate spheroid. In no one single point, shape, texture of shell, colour or character of markings, does this egg approach to those of either Orioles or Green Bulbuls. The shell is very close grained and fine, but only moderately glossy. The ground is pale green, and it is streaked and blotched with pale dull brown. The markings are almost entirely confluent over the large end (where they appear to be underlaid by dingy, dimly discernable greyish blotches), and from the cap thus formed they descend in streaky mottlings towards the small end, growing fewer and further apart as they approach this latter, which is almost devoid of markings.

It is impossible to generalize from a single specimen as to the position this bird *should* hold, but this one egg renders it quite certain to my mind that the nearest allies of *Irena* are neither *Oriolus* nor *Phyllornis*, and that it is quite impossible to place it with the *Dicruri*. The eggs of *Saroglossa spiloptera* are not very dissimilar, and I expect that it is somewhere between the PARADISEIDÆ, STURNIDÆ, and ICTERIDÆ that *Irena* will ultimately have to be located.

The egg measures 1·1 by 0·73.

470.—*Oriolus kundoo, Sykes.*

The Indian Oriole breeds from May to August (the great majority, however, laying in June and July) almost throughout the plains country of India and in the lower ranges of the Himalayas to an elevation of fully 4,000 feet. In Southern and Eastern Bengal it only, so far as I know, occurs as a straggler during the cold season, and I have no information of its breeding there. It does not apparently ascend the Nilghiris, and throughout the southern portion of the peninsular it breeds very sparingly, if at all; indeed, it is just at the commencement of the breeding season, when the mangoes are ripening, that Upper India is suddenly visited by vast numbers of this species migrating from the south.

The nest is placed on some large tree, I do not think the bird has any special preference, and is a moderately deep purse or pocket, suspended between some slender fork towards the extremity of one of the higher boughs. From below it looks like a round ball of grass wedged into the fork, and the sitting bird is completely hidden within it, but when in the hand it proves to be a most beautifully woven purse, shallower or deeper as the case may be, hung from the fork of two twigs, made of fine grass and slender strips of some tenacious bark and bound round and round the twigs, and secured to them much as a prawn net is to its wooden frame-work. Some nests contain no extraneous matters, but others have all kinds of odds and ends, scraps of newspaper or cloth, shavings, rags, snake skins, thread, &c., interwoven in the exterior. The interior is always neatly lined with fine grass stems.

Very commonly the bird so selects the site for its nest that the leaves of the twigs it uses as a frame-work form more or less of a shady canopy overhead; in fact, as a rule, it is from very few points of view that even a passing bird of prey can catch sight of the female on her eggs. Possibly the brilliant plumage of the bird (which has endowed it amongst the natives with the name of *Peeluk*, or "The Yellow One") may have had something to do with the concealment it so generally affects.

The nests vary a good deal in size. I have seen one with an internal cavity 3½ inches in diameter and over 2½ deep. I have seen others scarcely over 2½ inches in diameter and not 2 in depth, which you could have put bodily, twigs and all, inside the former.

As a rule, the purse is strong and compact, the material closely matted and firmly bound together; but I have seen very flimsy structures, through which it was quite possible to see the eggs.

Four is the greatest number of eggs I have ever found in one nest, but it is quite common to find only three well incubated ones.

Captain C. H. T. Marshall reports having found several nests of this species about Murree at low elevations.

Mr. W. Blewett tells me that he obtained two nests near Hansie on the 1st and 14th July respectively. The nests (which he kindly sent) were of the usual type, and were placed, the one on an Acacia, the other on a Loquat, tree, at heights of 10 and 12 feet from the ground. Each contained three eggs, the one clutch much incubated, the other perfectly fresh.

Writing from near Rohtuk Mr. F. R. Blewitt says: "The breeding season is from the middle of May to July. The nest is made on large trees, and always suspended between the fork of a branch. I have certainly obtained more nests from the Tamarind than any other kind of tree.

"The nest is cup-shaped, light, neat, and compact. The average *outer* diameter is about 4·8; the *inner* or cup cavity about 3·6. Hemp-like fibre is almost exclusively used in the exterior structure of the nest, and by this it is firmly secured to the two limbs of the fork. Cleverly indeed is this work performed, the hemp being well wrapped round the stems and then brought again into the outer frame-work. Occasionally bits of cloth, thread pieces, vegetable fibre, &c., are introduced. On one occasion I got a nest with a cast-off snake skin neatly worked into the outer material.

"The lining of the egg cavity is simply fine grass, if we except the occasional capricious addition of a feather or two, an odd piece of cotton or rag, &c. Three appears to be the regular number of eggs. This bird is to be found in small numbers all over the country here; its habits are well described by Jerdon. It is, as I have observed, hard to please in its choice of a nest site. I have watched it for days going backwards and forwards, from tree to tree and from fork to fork, before it made up its mind where to commence work."

Captain Hutton records that "this is a common bird in the Dhoon, and arrives at Jerripanee, elevation 4,500 feet, in the summer months to breed. Its beautiful cradle-like nest was taken in the Dhoon on the 29th May, at which time it contained three pure white eggs sparingly sprinkled over with variously sized spots of deep purplish-brown, giving the egg the appearance of having been splashed with dark mud. The spots are chiefly at the larger end, but there is no indication of a ring. The nest is a slight somewhat cup-shaped cradle, rather longer than wide, and is so placed, between the fork of a thin branch, as to be suspended between the limbs by having the materials of the two sides bound round them. It is composed of fine dry grasses, both blade and stalk, intermixed with silky and cottony seed down, especially at that part where the materials are wound round the two supporting twigs; and in the specimen before me there are several small silky cocoons of a diminutive *Bombyx* attached to the outside, the silk of which has been interwoven with the fibres of the external nest. It is so slightly constructed as to be seen through, and it appears quite surprising that so large a bird, to say nothing of the weight of the three or four young ones, does not entirely destroy it."

From Futtehgurh Mr. A. Anderson remarks: "The nest and eggs of this bird so closely resemble those of its European congener (*O. galbula*) that little or no description is necessary. The Mango-bird lays throughout the rains, July being the principal month. One very beautifully constructed nest was taken by me on the 9th July 1872, containing *four* eggs, which, according to my experience, is in excess of the number usually laid. I have frequently taken only a pair of well incubated eggs.

"Two of the four eggs above alluded to were *quite fresh*, while the other two were tolerably well incubated. The nest is *fitted outwardly* with tow, which I have never before seen. One of the pieces of cloth used in the construction of this nest was 6 inches long."

"At Lucknow," writes Mr. R. M. Adam, "I found this species on the 20th May building a nest in a Neem tree, and on the 24th I took two eggs from the nest. On the 10th June I saw another pair, only making love, so they probably did not lay till the end of that month!"

Dr. Jerdon notes that he "procured a nest at Saugor from a high branch of a Banian tree in cantonments. It was situated between the forks of a branch made of fine roots and grass, with some hair and a feather or two internally, and suspended by a long roll of cloth about three quarters of an inch wide, which it must have pilfered from a neighbouring verandah where a tailor worked. This strip was wound round each limb of the fork, then passed round the nest beneath, fixed to the other limb, and again brought round the nest to the opposite side; there were four or five of these supports on either side. It was indeed a most curious nest, and so securely fixed that it could not have been removed till the supporting bands had been cut or rotted away. The eggs were white, with a few dark claret-coloured spots."

The eggs are typically a moderately elongated oval, tapering a good deal towards one end, but they vary much in shape as well as size. Some are pyriform, and some very long and cylindrical, quite the shape of a Cormorant's or Solan Goose or Diver's egg. They are always of a pure excessively glossy China white, which, when they are fresh and unblown, appears suffused with a delicate salmon pink, caused by the partial translucency of the shell. Well defined spots and specks, typically black, are more or less thinly sprinkled over the surface of the egg, chiefly at the large end. Normally, as I said, the spots are black and sharply defined, and there are neither blotches nor splashes, but numerous variations occur. Sometimes, as in an egg sent me by Mr. Nunn, all the spots are pale yellowish-brown. Sometimes, as in an egg I took at Bareilly, a few spots of this colour are mingled with the black ones. Deep reddish-brown often takes the place of the typical black, and the spots are not very unfrequently surrounded by a more or less extensive brownish-pink nimbus, which in one egg I have is so extensive that the ground colour of the whole of the large end appears to be a delicate pink. Occasionally several of the clear cut spots appear to run together and form a coarse irregular blotch, and one egg I possess exhibits on one side a large splash. The eggs as a body, as might have been expected, closely resemble those of the Golden Oriole, to which the bird itself is so nearly related; and as observed by Mr. Newton in regard to the eggs of that species, so in *my* large series, the prevalence of greatly elongated examples is remarkable.

The eggs vary in length from 1·03 to 1·32, and from 0·75 to 0·87 in breadth; but the average of fifty eggs measured was 1·11 by 0·81.

472.—*Oriolus melanocephalus, Lin.*

I have already noticed (STRAY FEATHERS, Vol. I., p. 439) how impossible it is to draw any hard and fast line, in practice, between this the so-called "Bengal Black-headed Oriole" and the supposed distinct southern species, *O. ceylonensis*, Bp.

The present species certainly breeds in suitable (*i. e.*, well wooded and not too bare or arid) localities throughout Northern and Central India, Assam, and Burmah, and I have specimens from Mahableshwar, from the Nilghiris, and even Anjango, that are nearer to typical *melanocephalus* than to typical *ceylonensis*. Of its nidification southwards I know nothing. I have only myself taken its eggs in the neighbourhood of Calcutta.

It appears to lay from April to the end of August. The nest of this species, though perhaps slightly deeper, is very much like that of *kundoo;* it is a deep cup, carefully suspended between two twigs, and is composed chiefly of tow-like vegetable fibres, thin slips of bark and the like, and is internally lined with very fine Tamarisk twigs or fine grass, and is externally generally more or less covered over with odds and ends, bits of lichen, thin flakes of bark, &c. It is slightly smaller than the average run of the nests of *kundoo.* The egg cavity measures about 3 inches in diameter and nearly 2 inches in depth. I myself have never found more than three eggs, but I dare say that like *kundoo* it may not unfrequently lay four.

The late Captain Beavan writes: "A nest with three eggs, brought to me in Manbhoom on 5th April 1865, is cup-shaped; interior diameter, 3·5; depth inside, 2 inches. It is composed outside of woolly fibres, flax, and bits of dried leaves, and inside of bents and small dried twigs, the whole compact and neat. The eggs are of a light pink ground (almost flesh-coloured), with a few scattered spots of brownish-pink, darker and more numerous at the blunt end. They measure 1·125 by barely 0·8."

From Raipoor Mr. F. R. Blewitt remarks: "*Oriolus melanocephalus* indiscriminately selects the Mango, Mowah, or any other kind of large trees for its nest, which is invariably firmly attached to the extreme terminal twigs of an upper horizontal branch varying from 20 to 35 feet from the ground. Owing to the position it selects for the safety of its nest, it sometimes happens that the latter cannot be secured without the destruction of the eggs. It nidificates in June and July, and it would appear that both the birds, male and female, engage in the construction of the nest. Three is the normal number of the eggs, though on one occasion my shikaree found four in a nest."

Buchanan Hamilton tells us that this species "frequents the groves and gardens of Bengal during the whole year, and builds a very rude nest of Bamboo leaves and the fibres that invest the top of the Cocoanut or other palms. In March I found a nest with the young unfledged."

I confess that I believe this to be a mistake: neither season nor nest correspond with what I have myself seen about Calcutta. The nests, so far from being *rude,* are very neat.

Typically the eggs are somewhat elongated ovals, only slightly compressed towards one end, but pyriform as well as more pointed varieties may be met with. The shell is very fine and moderately glossy. The ground colour varies from a creamy or pinky white to a decided but very pale salmon colour. They are sparingly spotted and streaked with dark brown and pale inky purple. In most eggs the markings are more numerous towards the large end. Some have no markings elsewhere. The dark spots, specially towards the large end, are not unfrequently more or less enveloped in a reddish-pink nimbus. Though much larger and much more glossy, some of the eggs, so far as shape, colour, and markings go, exactly resemble some of the eggs of *Buchanga albirictus.* The eggs of *O. kundoo* are typically excessively glossy China white, with few well defined black spots. The eggs of *O. melanocephalus* are typically somewhat less glossy, with a pinky ground and more numerous and less defined brownish-purple spots and streaks. I have not yet seen one egg of either species that could be mistaken for one of the other, although of course abnormal varieties of each approach each other more closely than do the typical forms.

The dozen eggs that I possess of this species vary from 1·1 to 1·2 in length, and from 0·78 to 0·87 in breadth, and the average is 1·14 by 0·82. Although the average is somewhat larger than that of the preceding species, and although none of the eggs are quite *as* small as many of those of *kundoo,* still none are nearly so large as the finest specimens of the latter's eggs. Probably had I an equally large series of the eggs of the present species, we should find that as regards size there was no perceptible difference between the two.

475.—*Copsychus saularis, Lin.*

The Magpie Robin breeds, but sparingly, throughout the plains of Upper India. The majority resort during the nesting season to the Dhoons and Terais that skirt the Himalayas, and to the lower ranges of these latter, in which they may be found nesting up to an elevation of at least 5,000 feet.

In Central India they would seem (but my information is avowedly very imperfect) to breed but rarely, and in Southern India I only know of their nesting in the Wynaad and about the lower slopes of the Nilghiris.

They lay from the end of March to quite the end of July, but by far the majority of eggs are to be found alike in hills and plains during the latter half of April and May. So far as my experience goes, and I have taken scores, the nests are invariably placed in holes, in trees, banks, or walls, or under the eaves of huts. I have never seen or personally heard of a well attested instance of their breeding in bushes, but it is still pretty certain from what Captain Beavan and others have recorded that they do, at any rate occasionally, nest in such situations.

In the plains the nest is generally composed of roots, grass, fibres, and feathers, but in the hills moss and lichens are largely used. In shape the nest is typically a broad, very shallow, losely built saucer, some 4 or 5 inches in diameter, and with a central depression about an inch in depth; but they vary much according to the shape and size of the cavity in which they are placed. Some are more regularly cup-shaped, while many are mere *pads.* A few small twigs, or a few dead leaves, may at times be found doing duty as a foundation; but whether placed there by the bird, or deposited by the wind anterior to the construction of the nest, may be doubtful. Five is unquestionably the full complement of eggs, although once or twice I have taken four partially incubated ones.

Captain Unwin says: "A nest that I found in a hole in a tree about 4 feet from the ground in the Agrore Valley on 18th May 1870 contained four fresh eggs. It was a moderately large saucer, about 4½ inches in diameter and nearly 2 inches thick, composed externally of rather coarse grass and the shallow egg depression lined with finer grass and grass-roots."

Captain G. H. T. Marshall records that this species "breeds freely at low elevations all round Murree."

I have found it breeding in the Sutlej Valley below Kotegurh, and near Solon below Kussowlee.

Captain Hutton says: "*Copsychus saularis* arrives in the hills up to about 5,500 feet in the beginning of April, returning to the Dehra Dhoon early in the autumn. In the Dhoon it breeds in May and June, constructing a shallow nest of fine woody flower-stalks, intermixed with fine roots and the dry tendrils of climbing plants, with a little moss externally, and placed within a hole in some large tree, or in a bank or wall, where it lays five eggs of a pale bluish-green, thickly spotted and blotched with purplish-brown, and showing an imperfect ring of nearly confluent blotches at the larger end. There is, however, great variety both in the number and size of spots and in intensity of colouring, some being blotched as well as spotted, others being simply and uniformly freckled with rufous brown without any indication of a ring at the larger end, and in these the size is somewhat less. Having obtained five or six of these typical nests and shot the old birds for examination, there can be no doubt about the correctness of the foregoing remarks; yet at the same time I am still fully convinced that the nest and white eggs formerly noticed *(Journal Asiatic Society, Bengal.)*, as having been taken from a hole in a bank, was a mere accidental variety, for the nests are the same as to materials and situation, while the circumstances of the pinky white eggs appears to me to be the effect of some temporary derangement of the system, precisely as we sometimes detect a white specimen in the nest of the Hill Mynah (*Eulabes intermedia*)."

I may add that I do not doubt that Captain Hutton was quite right, and that his "carneous cream-coloured" eggs verily belonged to this species. It is well known that eggs of Passerine birds, normally blue or bluish-green, occasionally assume this pinky shade. I have several such of *Drymoipus terricolor*.

Mr. Brooks tells us that the Magpie Robin is "common at Almorah and near all villages. The nest is formed under the eaves of houses, or in holes in trees, but the bird gives a decided preference to a dwelling-house. Like the English Robin it is a most sociable bird, and appears to prefer the proximity of man.

"In Kumaon it lays about the middle of May."

He added *in epist.*: "The egg is a minature of some of those of the Blackbird or Ring-ouzel."

From Nynee Tal Captain Marshall says: "I found a nest with five eggs at Bheem Tal in a hollow tree about 6 feet from the ground on the 9th or 10th June. The hole was lined with roots and grass to form the nest."

From Nepal Mr. Hodgson remarks: "The female usually lays five spotted eggs, bringing up from three to four young ones, and but once a year unless the first brood has failed or been rifled from her. The nest is carelessly made of grass, but is always placed in a secure and sheltered position, commonly a hole in a wall, sometimes the interior of a low thick prickly plant."

From Sikhim Mr. Gammie notes that he "took a nest on the 17th June, at an elevation of 2,500 feet below Rungbee, which contained three fresh eggs. It was in a hole of a tall tree, nearly half way up, and was little more than a pad of rather coarse roots."

Captain Marshall, R. E., writing from Saharunpoor, says: "I send the bird and a pair of its eggs. I have found only one nest, and this was on the 23rd April in a hole in the wall of a building. The nest was made of fine twigs, very neatly shaped and lined with fibre; there were five fresh eggs in it."

Most of the nests that I have taken in Bareilly, Agra, and Etawah were found in May.

Mr. R. M. Adam records that he "took a nest of this bird at Fyzabad, in Oudh, on the 4th May. The nest contained three eggs. It was situated in a hole of the wall of a mud hut."

Mr. F. R. Blewitt, writing from Saugor, remarks: "On the 29th June I found the nest in the hollow of a large dried limb of a Goolur tree (*Ficus glomerata*). It was made of coarse and fine grass and roots, placed to about the thickness of an inch at the base of the hollow. As to the *lining* there were a few horse hairs. The structure as a whole was circular, with a diameter of 4½ inches."

Captain Boys says: "This very sprightly bird frequents the trees and bushes of the gardens, and, like the English Robin, carries its tail very erect, which gives it a bold appearance. It is very familiar, and has a sweet note. Its food consists of insects, and it builds in the chinks and holes of walls, forming its nest of small dry twigs and grass-roots, and laying five greenish-blue eggs, blotched all over with brown, but mostly at the larger end."

Mr. E. Aitken, tells me that "in Bombay this bird commonly breeds in holes in the walls and roofs of houses. I recollect many years ago finding a nest under a large tile at the corner of the roof of a house. I think the birds began to build in April, and that I looked at it in May, when I found two young ones and an old egg. In Poona they seem to be scarcely so familiar. Last year, after the middle of May, I saw one carrying building materials up to the middle of a Cypress tree. As the trunk could not have contained a hole large enough to build in, they must have been making their nest simply among the dark foliage."

Mr. J. Darling (Junior) informs me that on the 29th March, at Vythery, S. Wynaad, he took a nest at an elevation of about 2,300 feet.

"The nest was placed in a hole in a Blackwood tree about 6 feet from the ground. The aperture of the hole was about 6 inches in diameter, and the hole ran downwards for about 8 inches. The nest was at the bottom of the hole. A few twigs served as a foundation, and on these was placed a circular pad of fibres, roots, and moss, 5 inches in diameter and 3 inches in thickness, with a shallow central depression lined with finer fibres in which rested five eggs."

From Ceylon Mr. Layard tells us that it is seldom seen far away from human habitations, about which it commonly builds, though the nest is often placed in a thick bush or hollow tree. The eggs, four in number, are bright blue, thickly spotted with brown at the obtuse end.

Mr. Swinhoe very correctly remarks: "Lieutenant R. C. Beavan says (Proceedings Zoological Society, 1864, p. 376) that *Copsychus saularis* 'builds in bushes.' This is remarkable for so genuine a Robin as this bird is. In Amoy I have only noticed its nest in the holes of walls, banks, or houses, oftenest in some corner of the under-roof or beaming of a verandah."

This is quite my experience here and that of every one who has communicated with me on the subject.

The eggs are typically oval, neither very broad nor very narrow; somewhat elongated, pyriform, and almost globular varieties also occur; they are moderately glossy. The ground colour varies as much as does the size and shape of the egg. In some it is greenish; in others greenish-white; while in others it is a beautiful pale sea green; or again a delicate pale, only slightly greenish, blue. Many of the eggs are perfect miniatures of eggs of *Merula simillima*, and recall varieties of those of the English Black-bird, which indeed are almost the only English eggs with which I am familiar, to which their colouring at all closely approximates. They are all streakily blotched and mottled with different shades of brownish-red: some comparatively thinly, generally somewhat densely, and occasionally so closely as to leave but little of the ground colour visible. In all cases the markings are most numerous at the large end, where they very commonly form a conspicuous irregular mottled cap. Occasionally, but rarely, small specks and spots take the place of streaky blotches, and the smaller end is almost entirely free from markings. Faint underlying spots of pale inky purple are traceable in a few specimens. In the extent and bold streaky character of the markings these eggs seem to me to stand apart from those of the *Saxicolinæ*, where Jerdon places the genus, and to approximate to those of the *Turdinæ*, where Gray locates it. No doubt the eggs show a strong affinity to those of *Thamnobia*, but this latter also has no business, according to my view, amongst the *Saxicolinæ*.

It is noteworthy that some specimens of the eggs pretty closely resemble the peculiar variety of the Nightingale figured by Mr. Hewitson, *pl.* XXXIII, Fig. 2.

In length the eggs vary from 0·78 to 0·95, and in breadth from 0·6 to 0·75; but the average of forty-three eggs is nearly 0·87 by rather more than 0·66.

476.—*Cercotrichas macrourus, Gmel.*

The Shama is a permanent resident of the warm and well watered jungles of the Peninsula of India, the Sub-Himalayan region as far west as the Ganges, Southern and Eastern Bengal, Assam, Cachar and Burmah, and it is certain that it breeds in all these localities; but my only information in regard to its nest and eggs are from Tenasserim.

Well might Jerdon doubt that Philipps' Shama, described as perching on walls and breeding in houses, could be this species. In the North-Western Provinces it is absolutely unknown, except in the the lower outer ranges of the Himalayas and the various Terais and Dhoons that skirt their bases.

As to its nidification in Tenasserim Mr. Davison writes: "I have only found two nests of this bird: the first I obtained on the 17th April, on the road to Meeta Myo, about 4,000 feet above the sea level. It was in a hole in an old stump growing on the side of a mountain torrent. It was built of dry leaves and twigs, and the egg cavity was lined with finer dry twigs. It contained two half fledged young ones and one addled egg.

"The second nest I found at Shymootee, about 7 miles from Tavoy, on the 5th May 1874; it was placed in a hole at the top of an old stump. The materials it was composed of were the same as in the other case, but much more in quantity. The hole went rather deep, and the bird had filled up the cavity to within about 4 inches of the top of the stump, thus making the depth of the nest from top to base of foundation more than 12 inches. The hole in the stump measured only 3·5, the egg cavity being 3 inches in diameter. This nest contained two partially incubated eggs and one addled one."

The eggs are moderately broad ovals, a good deal compressed towards the small end and exhibiting a slight pyriform tendency.

The shell is fine and compact and has a slight gloss.

The eggs remind one a good deal of some of the Larks' eggs. The ground appears to be a dull greenish-stone colour (but very little of it is visible), and it is everywhere very densely freckled, in some rather streakily, with a rich almost raw-sienna brown, in amongst which dull purplish markings are, when the egg is closely looked into, found to be thickly mingled. The combined effect, looked at from a little distance, is of a dense ruddy purplish-brown mottling.

The eggs are small, it seems to me, for the size of the bird. The few we have vary from 0·87 to 0·9 in length, and from 0·6 to 0·62 in breadth.

477.—*Notodela leucura, Hodgs.*

The White-tailed Blue-chat, according to Mr. Hodgson's notes, breeds in the central regions of Nepal, amongst brushwood or low jungle, during the months of April and May. The nest is generally placed on some ledge of rock, more or less sheltered by grass or bushes, and is a deep massive cup composed of mosses and moss-roots. Four eggs are said to be laid, and these are figured as moderately broad ovals much pointed towards one end, measuring 0·9 by 0·65, and of an uniform mottled or curdled pinkish-clay colour.

Dr. Jerdon tells us that at Darjeeling the Lepchas brought him a nest and eggs, alleged to belong to this bird, exactly resembling those of *Niltava sundara.*

I have never taken the nest myself, but I have little doubt that the Lepchas were correct. A nest of this species, containing two fresh eggs, was taken by Mr. Gammie at Rishap, near Darjeeling, at an elevation of about 4,000 feet, on the 14th May. It is a large somewhat shallow cup, about 5 inches in external diameter and 2 inches in height, composed externally chiefly of dead leaves and dry grass, but internally of the finest possible moss-roots compactly fitted together. A good deal of green moss is incorporated in the body of the nest, and shows out here and there amongst the dead leaves with which it is almost entirely coated.

The eggs sent by Mr. Gammie are very regular, moderately broad, ovals with scarcely any gloss, though the texture of the shell is very fine and satiny. They are an uniform, very pale, salmon pink, entirely devoid of all regular markings, although, if examined in a very bright light, they appear to be excessively faintly—in fact scarcely perceptibly—freckled all over with the palest possible grey, which is absolutely invisible unless looked very closely into. This is not at all the egg that I should have expected from this species, but it agrees well with Mr. Hodgson's and Dr. Jerdon's accounts. The eggs measure 0·95 by 0·69, and 0·91 also by 0·69.

479.—*Thamnobia fulicata, Lin.*

This and the next, *T. cambaiensis,* constitute another of those puzzling pairs of Northern and Southern forms which it is very doubtful to me whether we ought to retain as different species.

Writing of them years ago Mr. Blyth remarked: "To judge from skins only, these might well be supposed to be the same species in summer and winter dress; but such is not the case; each is found at all seasons within its own range of distribution, that of *T. fulicata* extending to Ceylon, and that of the other not reaching to Lower Bengal."

But as I have pointed out (STRAY FEATHERS, Vol. I, p. 182), it is in this case also impossible to draw any hard and fast fine between these two supposed species, and birds are to be met with in Sindh, Jodhpoor, and Guzerat quite intermediate between the two. Whether this is also the case in the centre and on the east of the Peninsula I have not yet ascertained.

I have never myself taken the eggs of the true typical *fulicata;* those that I obtained in Guzerat pertain to the intermediate form, but from Ahmednuggur in the Deccan the Revd. H. J. Bruce sent me typical specimens, birds and eggs, together with the following note:—

"*May 25th,* 1869.—Found a nest of *Thamnobia fulicata.* It was reported to me in the morning as having two eggs and one chick, but when I went to it in the evening it contained two chicks and only one egg. I secured the egg, which was nearly ready to hatch. The nest was built under a bank in a hilly and uncultivated field. It was very neatly made of fine twigs or roots and lined with a layer of hair. The egg cavity was about 2½ inches in diameter and 1½ inch deep."

Mr. E. Aitken remarks: "I have found many nests of this Robin at Poona, and one, I think, at Khandalla. Poona is about 2,000 feet above the sea.

"I cannot give the dates very particularly. I took fresh eggs from a nest on 3rd April 1871, and found another on the 15th of the same month. By that time I noticed that some young ones had left their nests. I believe I have found them *building* at all times from the beginning of February, or earlier, to at least the beginning of May.

"They breed on the bare rocky plains, or in the cantonment among houses. In the former case a hollow in the ground, either wholly or partly covered by a stone, is almost invariably the situation. I believe this hollow is in many cases widened, if not made altogether, by the birds. In the neighbourhood of houses any suitable hole in a wall or roof is chosen. I have seen a nest in a thatch roof. They never build so high as *Copsychus saularis*. I have not found a nest that I could not reach from the ground.

"The nest, which I must describe from recollection, is not more than 3 or 3½ inches in diameter, internally neatly made of roots and fibres. I think I found, once at least, a piece of snake's skin in it. It has no very distinct lining.

"I have never found more than three, or less than two, eggs. These were very thickly spotted, especially at the larger end, with dull purplish-brown on a pale bluish-white ground. I do not think they have two broods in the year. They only breed in the hot season and have hardly time for two successive nests. If they build twice in the same place, or ever use the nests of other birds, it is only by accident."

Lieutenant Burgess, in his notes on the habits of birds in Southern India, tells us of this species, which may be called the Southern Indian Robin, that "it breeds during the months of March, April, and May, building its nests in the holes of walls and rocks, as also in hollows under tussocks of grass. I subjoin some notes on the subject:—

"*May 9th*, 1850.—When passing outside the wall of a town, an Indian Robin flew off the wall and hovered before me, uttering a sharp hissing cry. Knowing by her manner that she had a nest near, I searched in the wall and found the nest, composed of rotten grass and straw, and some thread of woollen cloth. The nest contained three young ones, quite unfledged; their skin was of a black-lead colour."

"*March 19th*, 1851.—Found in a hole in the rocks the nest of the Indian Robin, containing two eggs."

"*March 27th*, 1851.—Found the nest of the Robin, containing two eggs, built at the foot of a little tuft of grass in a hole amongst the roots.

"The egg of this bird is of a very pale dusky blue, spotted all over with light brown and a few purplish spots here and there; length rather more than 0·8 of an inch by 0·6 in width."

Mr. Layard records that in Ceylon he has procured their nests, which are composed of hair, moss, and dry grass, in the months of June and July in Colombo, in December and April in the north. The eggs are from three to five in number.

The eggs which I took at Ahmedabad were, I suspect, abnormal forms. They are round ovals, moderately glossy, and of a pale bluish-white ground, and they are very thinly sprinkled here and there with a few minute spots and specks of pale yellowish-brown. They varied from 0·72 to 0·75 in length, and from 0·63 to 0·65 in breadth.

The eggs which the Revd. Mr. Bruce sent me from Ahmednuggur are of the true *Thamnobia* type—a greyish-white ground, thickly speckled and spotted all over, but more especially at the large end, where the markings become more or less confluent, with moderately pale yellowish-brown. The eggs are very similar to many that I have of *T. cambaiensis,* but are smaller than those of this species usually are.

They vary in length from 0·68 to 0·76, and in breadth from 0·55 to 0·56.

480.—*Thamnobia cambaiensis, Lath.*

The Northern Indian Robin breeds throughout the plains of Upper India (not however, I think, ascending the hills to any elevation above 2,000 feet) from March to August, during which period it has always two and often three broods. If disturbed, especially if the nest be robbed, it generally (but not always) constructs a fresh nest; otherwise it uses the same nest (only cleaning out the old and replacing it by new lining) for the whole season, and at times for two or three successive seasons. One pair reared eight broods in one and the same hole in my compound in three seasons. It builds commonly in holes in walls or banks, in niches in temples, under the eaves of huts, &c.; but it also builds not very unfrequently in thick bushes. In Mr. Nunn's garden at Bichpooree I found two nests between the bayonet-shaped leaves of plants of the *Yucca globosa,* wedged in against the stems.

The nest varies much in shape, size, and materials, according to situation and locality. When placed in holes they are usually merely soft, more or less circular, pads of soft grass, with a shallow central depression lined with horse or even human hair, fine roots or vegetable fibres, feathers, cotton, wool, or anything else soft that comes handy, with very frequently scraps of snakes' skins incorporated. Sometimes even in holes a regular but shallow cup-shaped nest is built, and this is always the case when bushes and, as a rule, when ledges in buildings or banks are chosen, and then roots and grass loosely but sufficiently firmly interwoven form the body of the nest, which is lined with similar materials to those used when nesting in holes. I have seen very neat nests, very different to the ragged pads which commonly satisfy our Robin, between 4 or 5 inches in diameter externally and nearly 3 inches in height, with a cavity some 2·5 in diameter and 1·5 in depth.

Four is the full complement of eggs, but they often lay only three, and I myself once found five.

Mr. W. Theobald makes the following note on the nidification of this species in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lay in the second week of April; eggs, four; shape, pointed oval pyriform; size, 0·79 by 0·60; colour, greenish-white, ringed and spotted with pale reddish and a little neutral tint; nest, loose grass and bits of snakes' skins placed in holes in the sides of nullahs."

Captain G. F. L. Marshall says: "Very common in the Saharunpoor District. It is familiar in its habits and breeds commonly in stations. I once found the nest cup-shaped in a bush, two or three times in a tuft of grass or Aloe near the ground, but in five cases out of six the nest was on the ground in a hole, or on a ledge of a bank, or in the hole of a wall.

"I have taken three fresh eggs on 26th March
,, three ,, 4th April
,, two ,, 10th ,,
,, two ,, 16th ,,
,, three ,, 28th ,,
,, four ,, 28th May
,, three ,, 1st June

and many others at intermediate times. The breeding season may be said to extend from March to June. The nest is usually made of grass and lined with horse-hair.

"The eggs, three or four in number, are rather round, of a bluish-white ground, thickly covered with brown spots, and are rather small for the size of the bird.

"I have found nests of this bird in very curious positions. One was built between two bricks in a native brick-kiln in course of preparation. The hen bird was sitting on the nest with the people working within a few feet of her. The nest would have been destroyed in the progress of the kiln long before the eggs would have been hatched. There were three eggs when I found it. Another nest was on the sill of a blind window in one of the canal chokis without an attempt at concealment of any kind, and a third was in the hole for the punkah rope to pass through the wall."

Mr. A. Anderson notes that this species "builds almost exclusively in holes of walls and banks. The nest is composed of grass, fibres, &c., and is generally lined with hair, not unfrequently with the addition of pieces of snakes' skins. It lays generally three and occasionally four eggs of a dirty greenish-white colour, speckled all over with reddish-brown spots, most thickly distributed however at the thick end. Some varieties are exceedingly pretty, especially those which have a purplish-red zone at the obtuse end instead of being freckled.

"Two pairs of these Robins built close to the Futtehgurh church three years ago: one pair took up their abode inside of a tin watering pot which had been placed in a slanting direction in a bush; the other pair took possession of an old piece of cloth that had been thrown over a bough of a tree, and which formed a sort of loop or bag at the bottom, inside of which the nest was built. They both laid the usual complement of eggs, *viz.*, three, but these fell a prey to the voracity of the so-called Blood-sucker (*Calotes versicolor*).

Writing from Saugor, but referring to his experience both in that district and in the Delhi Division, Mr. F. R. Blewitt tells us that this species "breeds in the latter half of April, May, June, July, and part of August. Builds in holes of walls, convenient fissures in rocks, and, what I have only observed *here*, on dwarf trees and bushes. On a jungle bush 4½ feet high I saw a nest supported by three upright twigs, and shot the male bird as he flew off it. I have kept the bird and the nest. Subsequently I found a second nest on the upper branches of a Keekur tree, near 6 feet high. Other nests were taken from Plum and 'Reunj' bushes.

"The nests, if they can be so called, in holes of walls and in rock fissures, are simply constructed of loose, coarse, and fine grass, with occasionally a few feathers of sorts to form as it were an upper layer. Those found in bushes were circular, some 4½ inches in diameter, the lower portion of coarse grass and roots well put together, with the egg cavity cup-shaped, some 3 inches in diameter, lined with fine grass, khus, and a few horse-hairs. In one nest small pieces of cotton were substituted for the hairs. Four appears to be the regular number of eggs."

From Sambhur Mr. R. M. Adam records that "the Indian Robin is very plentiful here, and breeds from March to June. A pair which built in my verandah, in April, had two eggs in the same nest on the 8th May, or about ten days after the first brood left the nest, and later they reared a third brood in the same nest.

"The nest is made in holes, in trees, stone or mud walls, the thatch of houses, or in prickly Pear bushes. Sometimes it is very carelessly made; at other times the bird bestows a good deal of labor on it. When carelessly made, a few tags of sheep's wool and some human hair rounded into a cup-shape suffice; but when carefully made, it is constructed of fibres, grass, and grass-roots, all firmly matted together, and the egg cavity is lined with different kinds of hair. The outer diameter of the nest measures 4 inches; the inner 2¼ inches, with a depth of 1¼ inch. In each of the numerous nests which I have taken there were either one or two pieces of snake's skin or a few pieces of mica, which is rather common about the roads when the Mohurrum tazzeas are being carried about. Two seems to be the normal number of the eggs, but I have sometimes found three; they are of a pale greenish colour, some with spots, and others with only freckles of various shades of reddish-brown. One egg I possess has a few very fine spots, while at the thick end there is a lovely zone of lilac and reddish-brown."

The late Captain Beavan noted that "this bird (the 'Suya' of the Bowries) is found in great abundance in the Manbhoom District, but more especially so in the breeding season; and I am inclined to think that many migrate thither in March for that purpose. At the end of March and the beginning of April the jungles swarm with them, and as many as fifty eggs of this species alone have been brought to me in one day. As observed by Mr. Theobald, it shows a great partiality for fragments of cast snake skins in the construction of its nest, which is in general a loose structure roughly made of grass bents and fibres, and lined with horse hair. It lays from three to four eggs of a dirty white colour, speckled with reddish-brown spots most thickly massed about the blunt end, in some forming an ill defined ring."

He added, writing from Umballa towards the end of October: "I have noticed that this species, which is so very abundant here a little later, and which breeds here in numbers in February and March, has almost entirely disappeared and is conspicuous by its absence."

I have not myself as yet been able to verify the fact of this species migrating during the breeding season. As far as I have observed, where it resides during the winter there it breeds during the summer.

In shape these eggs, which are moderately glossy, are commonly somewhat elongated ovals, more or less pointed towards the small end. Considerably elongated varieties are common, far more so than in *Copsychus saularis;* the ground colour is white, faintly tinged with either green, pink, pale brown, or even cream colour, green being the most common. The general character of the markings is a fine close speckling and mottling of different shades of reddish brown, but they vary very much both in their character, boldness, extent, and intensity. In all the markings are somewhat more dense towards the large end, where in many they form a more or less confluent cap. I have specimens before me in which, with a small confluent intensely deep brown cap, the rest of the surface is only thinly speckled with dingy yellowish-brown points; others are *finely* and closely speckled, and streakily spotted over the whole surface, so as to show but little of the ground colour anywhere, and with scarcely a perceptible concentration at the large end; while others again are pretty boldly streaked and spotted, as in the common type of *Copsychus saularis;* but these latter are somewhat exceptional forms, the general character of the markings being, as I have already remarked, fine pin's point specklings closely crowded and anastomising into dotty streaks. Occasionally pale inky purple spots underlie the primary markings, but these are only perceptible on a close examination of the egg. As in the case of *Copsychus saularis,* the eggs of this species appear to me to show no relation to the *Saxicolinæ.*

In length the eggs vary from 0·72 to 0·88, and in breadth from 0·48 to 0·67; but the average of fifty-seven eggs measured was 0·79 by 0·59.

481.—*Pratincola caprata, Lin.*

The Black Stone-chat breeds throughout the plains country of the Continent of India and Burmah and in the Himalayas, and ranges running southwards from these up to elevations of from 4,000 to 8,000* feet, according to latitude. On the mountains of the Peninsula of India and Ceylon it is represented by a larger and more robust race, which (having as yet met with no intermediate forms) I doubtingly retain as a distinct species.

The breeding season is from March to June, and eggs may be found everywhere during this period, but for all that the majority lay in the plains in March and April and in the hills in May.

In the plains perhaps the most favourite site for the nest is in a hole some little way down the side of a well, but any hole, almost, in the ground will if sheltered serve their purpose, and at times, but rarely, they will build in a dense bush or tuft of grass, but still even then on or *close* to the ground.

The nest, as a rule, is a shallow somewhat saucer-shaped pad, composed of soft grass, fine roots, and lined with the same, hairs, or other soft material.

I have found them composed entirely of human hair and sheep's wool, fitted together without any attempt at rounding, and I have once or twice taken neat circular nests closely woven of very fine grass and carefully lined with horse-hair.

Four is the full complement of eggs, but I have continually found only three, more or less incubated ones, in a nest, and five are recorded by more than one of my correspondents.

Mr. F. R. Blewitt says: "This Stone-chat is somewhat common in the Saugor and Nerbudda and Hoshungabad Districts. It is also to be met with in the more open country the whole way from Saugor to Sumbulpoor. I have repeatedly secured its eggs. The nests were always on the ground, of very simple construction, composed of grass-roots externally, and lined with fine grass or a little hair."

Captain Hutton tells us that "this little species, which is by no means uncommon in the hills even up to 8,000 feet, is also very abundant in the warmer climate of the Dhoon, where it breeds in May and June. On the first of the latter month I obtained a nest containing five eggs of a pale greenish-white, thickly spotted with rufous, especially at the larger end, where they become confluent and cloud the shell. One egg was larger and whiter than the rest, the rufous marking of the larger end not being quite so confluent but forming an ill defined ring. The nest was placed on the ground at the side of a low bank among grass, and was composed of very fine roots, dead leaves, and grass externally, and lined with black hair of cattle. It was of a rather flat cup shape."

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* Dr. Stoliczka correctly remarks: "Common all through the Sutlej Valley up to Nachar, but seldom further east above elevations of 8,000 feet."

From Sambhur Mr. R. M. Adam records: "I found a nest of this bird on the 23rd June 1873. The nest was in a hole in the bank of an open well. The hole appeared to have been made in the loose sand by the bird, and measured about 3·5 in diameter. The outer lining of the nest consisted of a few pieces of coarse grass, while in the egg cavity there were a few pieces of fine roots carelessly placed together and not rounded. The nest contained three eggs of a pale greenish colour with a zone of rust-coloured spots at the broad end, and a few spots and freckles of the same colour on the body of the egg.

"On the 29th June I saw a male bird making a hole with its bill in the bank of an open well, but on visiting it after several days no progress had been made."

From Saharunpoor Captain G. F. L. Marshall writes: "The only two nests that I have taken of this bird were structures of a most unique type; they were situated in the middle of tufts of Surkery grass, the insides of which had been all hollowed out so as to leave a circular space of bare ground in the middle about a foot in diameter, which was sparsely covered over with bits of grass; this circular space was roofed over by drawing the surrounding grass stems together, and weaving in other pieces so as as to form a sort of dome. The interior height of the structure was about 18 inches. The entrance was circular on one side near the top, above 15 inches above the floor of the chamber. The egg receptacle was a hollow in the floor of the chamber near one side farthest from the entrance and neatly lined with grass, about 2¼ inches across and about 1¼ inch deep.

"In one nest I found four eggs, slightly set, on the 8th April, and in the other nest were four young ones. This was towards the end of April."

Mr. E. Aitken remarks: "From the neighbourhood of Bombay this bird retires to the hills to breed. I found a nest at Khandalla last year in the middle of May.

"It was in a hole in the perpendicular bank of a railway cutting, and of course at the level of the station, which is about 1,900 feet, I believe, above the sea. The birds never seem to go much above that, in Khandalla at least. I do not think the hole was excavated by the birds, for I have seen one or two other nests in different situations, such as a small depression, or shallow hole, partly covered by a rock. In this case the hole was rather deep, so that I could not see very distinctly into it; but the hole seemed well lined (as it usually is) with grass or fibres, and there seemed to be at least four eggs. In one that I saw two years ago there were four eggs. They can scarcely have more than one brood in the year, for I do not think they begin to breed till May, and they return to the plains before the end of June."

I should note that in some parts of the country, though common enough in the cold weather, it breeds very sparingly. This is the case, for instance, in South Behar and Mirzapore, and even more so I think in Lower Bengal. Further detailing information, as to where it does and does not breed freely, is much needed.

The eggs are rather broad ovals, somewhat pointed towards one end, and fairly glossy. Somewhat spherical varieties however occur. The ground colour is a delicate pale bluish-green, and they are pretty finely speckled, mottled, and streaked with brownish-red. The markings are always densest at the large end, where they commonly form a mottled irregular cap, or rarely a zone, while towards the small end they are thin and sometimes altogether wanting. There are two types of marking: the one comparatively streaky and mottly, the other, which is the least common, speckly and spotty. They are not unlike, whether in shape or colouring, the eggs of the English Stone-chat, but they are usually considerably smaller, being scarcely, if at all, larger, as a rule, than those of the Chiff-chaff or the Willow Wren.

They vary, however, enormously in size—in length from 0·6 to 0·77, and in breath from 0·44 to 0·64; but these extremes represent exceptional eggs, and the majority run near to what I found the average of the fifty eggs measured to be, *viz.*, 0·67 by 0·55.

482.—*Pratincola bicolor, Sykes.*

Specimens from the Western Ghâts, the Nilghiris, Pulneys, and other Southern Indian ranges, are absolutely identical with others from the hilly portions of Ceylon. Under these circumstances I retain, subject to correction, Sykes's name, which was given, as far as I can make out, to a Mahableshwur specimen, in preference to Kelaart's name *atrata,* assigned at a subsequent date to the Ceylon bird.

Many naturalists will doubt the propriety of separating specifically the Southern Black Stone-chat. The only difference between this and the preceding species is one of size, and had I been able to obtain intermediate sizes, I should most certainly not have admitted the distinctness of the two. None of my specimens, however, (and they are numerous) seem to show a gradation between the lesser and greater races, and I therefore, *for the present,* accept these as distinct.

I may add that I have not yet been able (though such may be the case) to satisfy myself that in the Southern bird the bill is more than proportionally stouter, or the female much less rufescent, as has been asserted.

I have never taken the eggs myself, but many of these, as well as of the nests, have been sent me from time to time, by Mr. Carter and other friends, from the Nilghiris. All the nests appear to have been taken in holes in banks and walls during March, April, and May. They are all comparatively large, loose, saucer-shaped pads from 4 to 5 inches in diameter and from an inch to 1½ inch in thickness, composed of grass and vegetable fibre, with in some a few dead leaves, in others grass, roots, or a little wool, or a piece or two of rag incorporated into the body of the nest. In some nests there is a regular egg cavity some 3 inches across and nearly an inch in depth, while in others a very trifling depression towards the centre of the pad serves to contain the eggs. The nests seldom appear to have any regular lining.

Mr. H. R. P. Carter says: "At Coonoor, on the Nilghiris, I do not think this bird commences to build before the 15th March. On the 18th I found two nests just finished. I constantly found nests with eggs from that time until 22nd April. All the many nests I found were placed in holes in a cutting or slope, generally on the side of the road. They were more or less cup-shaped, and often neatly made, generally of grass and fibres mixed with the fur of hares. One nest I noted as made of grass, a small bit of coir matting, fern leaves, and down of thistle; no lining. Some are distinctly lined with fur and hairs. I think three is the most usual number, but I have found four eggs in a nest on more than one occasion.

"The male, so far as I could make out, never sat on the nest nor assisted the female during incubation."

Mr. Davison remarks: "The nest of this bird is certainly the most common on the Nilghiris. It nidificates in holes of banks or old walls. The foundation of the nest is composed of dry leaves, grass, roots, &c. The egg cavity is usually lined with hair or fur, or, where neither are obtainable, with fine dry grass.

"The eggs vary greatly in coloration. The general type of colouring is a dingy greenish-blue, spotted with a dingy brick-red, chiefly at the larger end, where the spots form a zone.

"It is a very familiar little bird, often building its nest in the banks of the busiest thoroughfares of Ootacamund.

"It lays four or five eggs, and sometimes only three."

Mr. Wait tells me that "it breeds pretty well throughout the Nilghiris, at elevations of from 3,000 to 7,000 feet, at all times from February to July. It builds in holes in banks, and often in drain-holes in walls, 3 or 4 feet from the ground. The nest is cup-shaped, with an internal diameter of from 1½ to 2 inches, composed of root fibres, grass, weeds, and scraps of woven materials, anything soft, and is more or less lined with very soft fibres or hair. Five, I think, is the regular number of eggs, but they often lay less."

From Kotagherry Miss Cockburn sends me the following note:—

"During the breeding season the cock is particularly loud in his song, and shows considerably more of his white feathers above his wings (which he has the power of doing) than at any other time of the year. I have often been amused watching a pair from my window when they fancied themselves unobserved. The little brown lady would be busy discussing some large grub tenderly provided for her by her lord and master, while he enlivened the repast by dancing and singing round her on the gravel walk, at the same time displaying every thread (or rather feather) of his snow-white *Bishop's Lawn* from beneath his little black silk surplice. Their nests are very plentiful in the months of February, March, and April. They generally build in small holes in the banks of roads, and collect a quantity of soft materials, such as wool and down, and usually lay four eggs. However, I once found a nest with six, and watched it with great interest until the young brood were all reared.

"Sometimes they choose curious places to build in. In my vineyard an old basket, bottom upwards, was put aside, and not moved for some little time. One day I noticed a hen Robin fly in and out through a small hole, and on looking in found a nest nearly finished. A few days after it contained four eggs, which in some way disappeared in a short time."

The eggs are typically broad ovals, slightly pointed towards, but somewhat obtuse at, the small end, and with but little gloss; they are, though closely resembling them in character, conspicuously larger and slightly more elongated than those of *P. caprata*. The doubts as to the distinctness of the two species, which must exist, are a good deal weakened by the very marked difference in the size of the eggs—a difference far more apparent to the eye than might be expected from a comparison of their respective linear measurements. The ground colour is a delicate, very pale, bluish-green, and they are more or less thickly freckled, speckled, and streaked with somewhat brownish-red. The markings are most dense in all cases towards the large end, where they form in most an ill defined mottled cap, and in some a broad, conspicuous, though irregular zone. Their style of coloration closely resembles those of the eggs of the Black, Black-eared, Russet, and Pied Wheatears, *as figured* by Bree; but the ground colour is far paler and bluer than in his figures, and the markings are brighter and redder. I ought to notice that a faint purple mottling often underlies, or is intermingled with, the red or brownish-red cap or zone. The eggs vary in length from 0·72 to 0·82, and in breadth from 0·53 to 0·63, but the average of forty eggs measured was a trifle less than 0·77 by rather more than 0·6, so that, as a body, the eggs are full one-third larger (taking *cubic** contents) than those of *caprata.*

483.—*Pratincola rubicola, Lin.*

This is not the place to discuss the distinctness or otherwise of the Indian race of the Stone-chat, which Blyth designated "*indica*" and Hodgson "*saturatior.*" I have already expressed my opinions on this subject in the IBIS and in STRAY FEATHERS (Vol. 1, p. 183, *q. v.*), and I need only say here that after a reconsideration of the subject, and taking numerous nests in the neighbourhood of Simla, some of which belonged to parents to my eye identical with English birds, I personally do not consider that it is possible, logically and consistently, to separate any of our Indian Stone-chats as pertaining to a distinct species.

In India the Stone-chat breeds throughout the lower ranges of the Himalayas (south of the first snowy range), at almost any elevation not exceeding 5,000 feet, from Afghanistan to Assam. Occasionally, too, they breed in the Salt Range, in the Suleiman Hills, in the plains districts of the Punjab which skirt the bases of these lower hills, and we have one instance on record of the nest being taken at the extreme south of the Saharunpoor District.

All about the valley of the Sutlege below Kotegurh, and again in the Valley of the Beas below Bajoura, I have found numbers of their nests, and even in the immediate vicinity of, though at a much lower level than, Simla itself I seen several.

April and May seem to be the months in which they mostly lay, but they have certainly two and possibly three broods, and I have had eggs sent me in from Kotegurh as early as the first week in March and as late as the middle of July.

The situation of the nest varies according to locality. I have found them generally in some low thick bush (generally a thorny one), or dense tuft of grass, on or near the ground. Mr. Brooks, as will be seen, found them mostly in between the crevices of the rough stone walls that support and bound the terraced fields which adorn our hill sides. I, too, have found a few in such places, in the walls of old deserted cattle byres, and once in amongst the debris of an old, broken, and forgotten culvert.

The nest is generally a more or less regular cup, composed exteriorly of rather coarse grass intermingled at times with moss, lined sometimes with fine grass, at others with soft grey fur, the hairs of cattle, a few feathers, and the like. The nests placed in holes in walls are, according to my experience, less regularly and carefully built, and sometimes are mere shapeless pads. The eggs appear to be indifferently four and five; and though a nest was sent me containing six, I have never seen so large a number in any of the fifty odd nests that I have examined *in situ.*

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* To calculate the *actual* cubic contents of an egg is a rather complicated problem; but the cubic contents of different sized, similarly shaped, eggs are *proportional* to their lengths multiplied by the squares of their diameters. So taking the eggs of *caprata* as averaging 0·67 by 0·55, and those of *bicolor* as averaging 0·77 by 0·6, their respective volumes are as 201 to 277, those of *bicolor* being thus more than one-third more massive than those of *caprata.*

At Murree, on the west, Captain C. H. T. Marshall says that the Stone-chat breeds in numbers in the valleys. Eastwards they seem to be comparatively rare in the breeding season, but I have had one nest and eggs sent me from Darjeeling.

Of its nidification at and near Almorah, Mr. Brooks has recorded the following interesting note:—

" At Almorah the young of the first broods were fully fledged by the middle of April. On the hills the cultivated land on the hill sides is all terraced, and to keep up the earth, low retaining walls of dry rubble stone are built. In course of time these low walls, generally only 3 or 4 feet high, become rather broken and overgrown with grass and plants of different sorts. Sometimes even small thorny shrubs grow from the face of the wall. It is in holes or hollows in these walls that the Stone-chat delights to build, the situation of the nest being generally near the top of the wall. The nest is always more or less hidden by grass and other plants whic hgrow in all the crevices of these walls. It is generally composed of moss, grass, fibres, and fine roots, and lined with hair and sometimes feathers; in fact, just the nest of the English Stone-chat; number of eggs five, which in size and colour exactly resemble those of the English bird. In addition to the terraces on hill sides, the bird breeds on open uncultivated hill sides where the ground is pretty well overgrown with stunted bushes which resemble the English Black-thorn. In these places I never succeeded in finding the nest, for the birds watched me more successfully than I watched them, and found me out whenever I had hidden myself for the purpose of watching them. I have no doubt, however, that in these sort of places, without broken banks or walls, the situation would be upon the ground at the bottom of a stunted bush a foot or 18 inches high, as in England we find the nest at the bottom of a stunted Whin bush and rather at one side of the bush, the entrance being from above, *not from the side of the bush,* the latter being the situation sometimes chosen by the Whin-chat. They lay in Kumaon from the end of March to June."

Captain G. F. L. Marshall writes: " I found a single nest of this bird on the 28th May, near the village of Jaroundah, on the southern border of the Saharunpoor District. It was in a thick Karounda (*Carissa carounda*) bush in a small patch of jungle on the banks of the Kullurpoor branch of the Eastern Jumna Canal. The nest was deeply cup-shaped, made entirely of grass, the coarser bits outside, and the finer and softer pieces neatly woven inside. There were two fresh eggs."

Whether or no the two races, *indica* and *rubicola,* really deserve specific separation, and I do not think that they do, I must admit that, from what I can remember, the eggs of our Indian form are somewhat smaller than those of its English representative. The largest egg that I possess, and I have numbers from Almorah, the Dhoon, and Kotegurh, is smaller than the egg figured by Mr. Hewitson, and several are so much smaller as to be if anything less than his figure of the Chiff-chaff's egg. In shape, too, they are possibly somewhat more elongated, being typically, I think, to judge from numerous examples, a rather elongated but obtuse ended oval. In colour and character of markings they are, however, apparently identical, or, if they differ, differ less so, even, than those of *caprata* and *bicolor.* The ground colour is dull pale green or greenish-white, and they are very finely and faintly freckled with pale brownish-red, the markings, which are very delicate, being always most numerous at the large end, to which they are often confined as a feeble cloudy zone or cap, but at times extend over nearly the whole surface.

In length the eggs vary from 0·62 to 0·77, and in breadth from 0·48 to 0·6; but the average of sixty-three eggs measured is 0·7 by 0·55, nearly.

486.—*Pratincola ferrea*, *Hodgs.*

The Iron-grey Stone-chat breeds throughout the Himalayas, at any rate from Murree to Bhootan, along the hills south of the first snowy ranges, (and in some cases, where these are broken through by large rivers, up the valleys of these latter, far beyond these ranges,) at elevations of from 4 to 8,000 feet.

The breeding season lasts from the commencement of April to the end of July, during which they often, to my certain knowledge, and very probably always, have two broods, which (if not molested) they rear in the same nest.

The nest is placed on the ground, sometimes under some large overhanging stone, or stout earthen clod, inside, or more or less concealed by, a tuft of grass or weeds, somtimes in a little depression in the hill side under some thick bush, often half under some great bulging root of a forest tree, and occasionally, but rarely, in some hole in the loose stone walls that in the hills support and protect our roads. It is a tolerably neat cup-shaped structure, sometimes slight and loosely put together, sometimes comparatively massive and compact, composed chiefly of moderately coarse grass, fine twigs, or moss, and lined either with finer grass stems, fine roots, horse-hair or soft fur; sometimes a great deal of vegetable fibre and even a little lichen is incorporated in the sides and towards the bottom of the nest. Externally, they vary in size from 3·5 to 4·5 in diameter, and from 2 to 3 inches in height. The cavity is about 2·5 in diameter and rarely much more than 1½ inch in depth; very often it is barely an inch. The eggs are four or five in number. I have as often taken five as four, and I have never found less than the latter number when the eggs were deeply set.

From Murree Captains Marshall and Cock report: "We took numerous nests of this species between the 1st May and the end of July. They breed in banks. Their eggs resemble those of *P. indica*—pale blue, with a few russet spots at the larger end. We twice found the egg of *Cuculus canorus* in this bird's nest. Elevation, 7,000 feet."

I have found many nests in Kooloo and in the Valley of the Sutlej and in and about Simla. At the latter station a pair have bred for some seasons close above my house. Of two nests taken, the one near Sultanpoor in Kooloo the other above Rampoor in the valley of the Sutlej, I recorded the following note:—

"Nests of this species found, the one on the 17th April under a rock in a dry bank, and another on the side of a bank overhung by a little grass on the 25th May, both at an elevation of about 5,000 feet, and both, containing five eggs, were rather loosely constructed grass cups, measuring about 4½ inches in diameter and 2½ inches in height. The egg cavities were about 2½ inches in diameter and 1½ inch in depth. The one was thinly but very neatly lined, chiefly at the bottom of the cavity, with fine white hairs from the fur of some animal.

The other had scarcely a trace of this same lining. From their size, and considering the genus to which the bird belongs, the nests were rather massive and compact. I have often seen nests of the same species of much the same materials, but scarcely half the size and not nearly so compact."

At Simla the late Captain Beavan tells us that on the 7th May he shot a female "off the nest, which was carefully concealed in a hole at the root of a tree not far from the house. It is a neat cup, the outside and bottom composed of dry moss lined inside with horse-hair and stems of grass; depth outside 2·5, inside 1·75; diameter inside 2·5, outside 4·25; number of eggs four."

We hear from Captain Hutton from Mussoorie that he "took its nest on the 30th June at about 6,000 feet elevation; it was placed on the ground well concealed among short grass on the side of an open hill free from forest. It was a shallow flattish cup in shape, composed of dry grass rather thickly disposed at the sides, and lined with horse-hair. Eggs three, of a pale greenish colour minutely speckled with rufous, chiefly so at the larger end. In some there is a faint indication of a ring at the larger end."

Mr. Hodgson's notes contain the following record as to its nidification in Nepal:—

"*May 1st, Jaha Powah.*—Female and nest; nest saucer-shaped, of fine grass and a little moss; no lining; on ground in open field against a small clod, only partially hid by grass; three eggs.

June 6th.—One nest with male and another with female, both on the ground half under bank of a field; nests of the ordinary shape, of soft dry grass with sparse lining of hair; internal diameter 3 inches, depth less than one; eggs two in one nest four in the other. Of the latter nest a *Cuculus canorus* was eating the eggs, and ate two out of the four while watched."

Writing from Sikhim Mr. Gammie says: "I have often found the nest of this species. On the 23rd of last May I found one in a hole in a bank by the road side; this was above Rishap, at an elevation of about 5,000 feet. The nest was a very compact little cup, measured externally 3·75 in diameter and 2·5 in height; internally 2·5 in diameter and 1·5 in depth. Internally it was smoothly lined with black hair. Externally composed of fine twigs, fine dry grass, a little moss, and moss-roots. It contained four hard-set eggs."

The eggs, although as a body averaging slightly larger and also, I think, varying less in dimensions, are almost *fac-similes* of those of the Indian race, at any rate of the common Stone-chat. They may be, as a whole, somewhat deeper coloured, but I can discover no such difference as would necessitate a separate description of them. In length they vary from 0·68 to 0·76, and in breadth from 0·53 to 0·6; but the average of twenty-one eggs measured, (and I much regret that I have measured so few out of the great numbers that I have taken and received,) is 0·72 by 0·57 nearly.

494.—*Cercomela fusca, Blyth.*

The Brown Rock-chat breeds in the northern portions of the Central Provinces, the western and northern districts of the North-Western Provinces, and the eastern and central parts of the Punjab and Rajpootana, from about the middle of March to nearly the end of July. It may occur and breed elsewhere, but it is only within these limits that I have any certain knowledge in regard to its nidification.

During the breeding season it lays regularly twice, at times thrice.

It is a great frequenter of old buildings, and all the grand Mahomedan and Hindoo ruins, forts, and palaces, mosques, and temples afford nesting sites for one or more pairs of this species. They are tame and fearless. A pair built for years regularly in my house at Etawah, and they often build about native huts. Deep ravines and earthy cliffs also attract them, and thousands of pairs build yearly in that vast net-work of ravines that fringe the courses of the Jumna and Chambul from opposite Agra to Calpee. Others nest in quarries, and I got several nests from those in the neighbourhood of Futtehpoor Sikri.

Holes in walls, whether mud or stone, and in earthen cliffs and banks, ledges and chinks in rocks and quarries and the like, are the sites chosen, and in these they build, for the most part, a loose pad-like nest with a feeble central depression, composed of grass stems, and roots, the hollow scantily lined with finer roots, horse hair, and a little wool. Rarely they construct a regular and fairly neat, but still shallow cup-shaped, nest, using the same materials.

Three is the usual complement of eggs, but I have repeatedly, (say in five cases out of fifty,) taken four.

Writing of his experience in the Saugor, Jhansi, and the Delhi Divisions, from all of which localities he sent me eggs, Mr. F. R. Blewitt says that this species "breeds from the middle of May to July. The nest, if it can be so called, I have found in holes of old walls, under ledges of rocks, on the ground, and on one occasion at the base of a thick growing bush. Occasionally too it makes its nest in the roofs of out-houses.

"For the construction of the nest, roots, grass, khus, feathers, and sometimes horse hair and wool are used, all loosely but thickly packed together, the finer material above. One nest I obtained at the base of a rock was neatly put together. The exterior, an inch or so thick at the base, was formed of roots and coarse grass the inner cavity cup-shaped, an inch and a half deep, was lined with fine khus and grass. The outer diameter was 5·5, inner 3.

"The eggs are in colour a very light blue-green with close dark brown spots, sometimes at the upper end coalescing so as to form a well defined ring. I have never found more than three eggs in a nest, although I am informed that four are sometimes met with in a single nest. The eggs are almost uniform in size; 0·8 in length and 0·6 in breadth may be taken as the average.

"I have seen this bird more frequently on the plains than among rocks and cliffs. It is in its habits free and familiar much like the Robins."

I notice that out of several scores of nests that I have seen, I myself never met with one, out in the open, built merely at the base of a bush. Such situations for their nests must, I think, be quite exceptional. I quote a couple out of many notes that I have made about this bird's nidification:—

"*Etawah.*—Took a nest of this Chat's on March 23rd. The nest contained three eggs slightly incubated, It was a flat pad of fine grass stems and roots, 4 inches in diameter and 1½ inch thick, with a broad shallow depression in the upper surface, which was very scantily lined (a mere pretence for lining) with a little wool and a few horse-hairs. It was in a hole in an earthen cliff of a dry nullah, about 9 or 10 feet from the ground and a foot in. The eggs were oval, a good deal narrowed towards the small end, pale blue, with numerous very faint reddish-brown spots and specks predominating at the large end."

"*March 29th, Ajmere.*—Took a nest in a hole in one of the old walls of the grand Arhai-din-ki-jompri. It was a shallow circular nest about 4 inches in external diameter, chiefly of grass, but with an intermixture of horse-hair, thread, sheep's wool, and cotton wool. There were three fresh eggs, rather long ovals, of a delicate pale blue; one almost entirely spotless, the others with numerous reddish-brown specks and spots; in one most numerous over the large end and sparse elsewhere, the other with most of the spots collected into a zone near the little end."

From Sambhur Mr. R. M. Adam tells us that "the Brown Rock-chat is very common, and is generally seen in pairs about old buildings, near villages, or the loose stony portions of the hills. On the 23rd March I found a nest in the Sambhur fort in a wall of an inner room. It was about 5 feet from the ground. It was cup-shaped, the outside measuring 4½ inches in diameter and the egg receptacle about 2½ inches. The nest was composed of fine grass, loosely rounded together, and had for a lining a layer of goat's hair worked carelessly round into the shape of the nest. The eggs are blue with pale, or sometimes dark, reddish-brown spots near the thick end.

"To show how fearless this little bird is, I may mention that in April last one of them built in a hole in a bath-room wall, and did not appear to be frightened by the people going out and in. About three weeks after, when the young had left the nest, the birds laid three eggs in the same nest, and these I took on 10th April 1873.

"Later these birds laid a third batch of eggs in the same nest, and these they were allowed to hatch."

Writing from Mount Aboo Captain E. Butler enquires: "Have you any instances recorded of *Cercomela fusca* depositing its eggs in the disused nests of other species? I found this bird last month (*i. e.*, in June) sitting upon three eggs in a nest (in a cave) which appeared to me to have belonged to *Cotyle concolor*. It was unmistakeably a nest belonging to one of the Swallows—a broad inverted cone built of mud to the side of the cave and lined with dry grass. I have seen many nests of this species this year, but in no other instance have I found the eggs laid in another bird's nest. The nest is usually placed in the hole of a rock, and great support given to the foundation by a strong embankment of innumerable small stones and lumps of dry earth which extends for 6 or 7 inches beyond the limits of the nest. I have also seen the nest in stone walls without this embankment. The eggs vary in number from three to four."

The eggs are truly *Saxicoline*. In shape moderately broad ovals, generally somewhat pointed towards the small end, and usually with a good deal of gloss. The ground colour is a most delicate, pale, pure blue. The markings consist of tiny specks and spots of different shades of red and brownish-red; often very faint, commonly almost exclusively confined to the larger end, but sometimes thinly speckled over the whole surface, and in one egg that I possess forming a broad, irregular, dotted zone round the small end, while the large end is almost entirely free from spots. This latter, however, is quite an abnormal variety. Occasionally the markings are entirely wanting. Considerably elongated examples occur, but as a rule the shape is very uniform.

In length the eggs vary from 0·75 to 0·88 in length, and from 0·58 to 0·65 in breadth; but the average of twenty-four eggs measured is 0·82 by 0·62.

497.—*Ruticilla rufiventris, Vieill.*

Dr. Stoliczka tells me that he saw four eggs of this species at the camping ground of Lama Yuroo, in the valley of the Tsarap in Rupshu, at an elevation of about 13,000 feet. They were a little larger, and their uniform sky blue colour was a little paler than that of the eggs of the common European Redstart.

I may notice that the bird is absolutely a winter and spring visitant only to the plains, and that in the following account Colonel Sykes must have made some mistake. He says: "Has a peculiar manner of vibrating its tail when seated on a bough. A pair of these birds built their nest in an out-house constantly frequented by my servants and within reach of the hand." (Sykes, Proceedings Zoological Society, 1832, p. 92). It is absolutely certain, in my opinion, that this bird never breeds in the plains of India.

504.—*Ruticilla cæruleocephala, Vig.*

This species, which is very common about Simla in the winter, making its appearance there with *frontalis* about the middle of November, retreats, like this latter bird, during March to higher regions, where it may be found throughout the summer, at elevations of from 10,000 to 13,000 feet, amongst other localities, in the snow-capped hills that bound Spiti on the south and west, and divide it from the valleys of the Sutlej and the Beas.

The only nest we ever got was placed in a cleft of a rock on the path leading up the Humpta Pass immediately above Juggutsook, at an elevation (as nearly as might be guessed with reference to that of Juggutsook and the top of the pass) of only 11,000 feet. It was a triangular-shaped pad, accommodated to the shape of the crevice, some 4 inches each way, composed chiefly of moss, but with some grass and Fir needles intermingled, and with a shallow central depression lined thinly with soft grey fur hairs, probably of hares: this was on the 16th April. The nest contained one single fresh egg, a very regular and perfect oval. In colour an uniform pale delicate blue, fairly glossy, and measuring 0·83 by 0·62. The mouth of the crevice, which was about 9 inches deep, was partly curtained by delicate drooping herbage, and we should never have noticed it if the two parents had not suddenly darted out of it when we were actually abreast of it. Unfortunately we shot neither, but I have no earthly doubt myself of what they were. I may add that a second egg said to belong to this species, and to have been taken on some of the hills overlooking and north of the Wangtoo Bridge, has since been sent me. It is precisely similar, but measures 0·85 by 0·63.

505.—*Nymphæus fuliginosus, Vig.*

This species cannot possibly be left in the genus *Ruticilla,* and I therefore propose for it the above generic name.

I have never myself taken the nest of this species, but have had it brought me by my collectors.

The birds breed in May and June (apparently at all elevations in the Himalayas from 5,000 to 13,000 feet), laying three, four, and even five eggs, generally in the immediate vicinity of running water. One nest found in a hole in a rock was composed of fine grass and moss-roots with a little moss—a very slight nest, little more than a lining to the hole. Another was described as far more substantial, planted in a niche of a rock with some few dry leaves and much moss intermingled in the structure.

Writing from Dhurmsalla Captain Cock remarked that "the so-called Water Robin nidificates in May and June in the North-west Himalayas. The nest is composed of moss, mixed with a little dried fibre and lined with white goat's hair; it is cup-shaped and rather deep; inner diameter of cup 2½ inches. The nest is generally placed on a shelf of rock, where it is protected from the rain and out of the reach of animals. It is always by the side of a hill stream. I have found two nests close together within 2 yards of each other. They lay four eggs, greenish-white, covered with rusty freckles.

"The eggs do not vary much either in size or colour."

Writing from the hills north of Mussoorie, Mr. Brooks says: "I found two nests between Batwari and Dangulla on the 11th May: one contained fresh eggs, and the other eggs deeply incubated. The situation of both nests was the same, *viz.*, in the crest on top of the small steep bank formed by the excavation for the road on the hill side above the river. The top edge of the excavation was about 7 or 8 feet above the footpath, and the nests were placd in small shallow holes or cavities and overhung by tufts of grass. They were composed of moss, fine roots, and fibres, and lined with hair and wool. The number of eggs was five, and they measured from 0·73 to 0·76 long, by 0·6 broad; 0·76 was, however, the average length, and only one was so short as 0·73.

"The eggs of one set were of a greenish-white ground colour, profusely mottled and spotted all over, almost hiding the ground colour, with pale reddish-brown, the markings being denser towards the larger end of the egg. This I take to be the typical coloration of the egg. The other set of eggs were of the same ground colour, but the spots and blotches were larger and more open and distinct, allowing considerable portions of the ground colour to be seen. Towards the large end the spots somewhat coalesced in the form of a zone, and at this part of the egg they were mixed with other spots of a reddish-grey. This latter set of eggs much resembled the better marked ones of *Pratincola caprata.*

"One nest was about 50 feet above the water level of the river, while the other was fully 100 feet. This bird was tolerably abundant along the course of the Bhagiruttee from Batwari to above Deralee; and so was *Chæmarrhornis leucocephala;* but although I spent much time in watching the old birds, I never succeeded in finding the eggs of the latter, so very careful is it not to disclose the whereabouts of its nest."

Dr. Stoliczka remarks that he "found it breeding near Losar, in the Spiti Valley, at an elevation of 13,000 feet. It lives here during the summer, but migrates to the lower hills about October, when the young birds are full grown."

Mr. Tristram remarks that the eggs of *Ruticilla* are *never* spotted, though the ground colour varies from pure white (in the single instance of *R. tithys*) to the most delicate white with a faint bluish tinge (in *R. Moussieri*) up to the very dark blue of *R. semirufa.* If this generalization be correct, it constitutes another proof that the present species cannot be classed as a *Ruticilla;* indeed, in its habits it most closely approaches the Fork-tails, *especially Henicurus scouleri,* in whose company it is so commonly found, and its eggs are not unlike, so far as coloration is concerned, many varieties of those of *M. maderaspatana.*

As regards character and colour of markings, and even as to shape (though those of the present species are considerably smaller), Mr. Hewitson's figure of the egg of *Calandrella brachydactyla* faithfully represents the most typical form of the Plumbeous Water-robin's eggs.

More or less broad ovals in shape, somewhat pointed or compressed towards the small end, the faintly greenish-white ground is almost entirely obscured in most specimens by a dense mottling and freckling of somewhat pale and dingy yellowish or reddish brown. Except for the faint tinge of green in the little of the ground colour that appears, some of these eggs are very similar to those of several species of our Indian Larks, unless indeed a somewhat greater fineness of texture and glossiness of surface help to separate them. Abnormal as they may appear for a bird hitherto classed as a Red-start, such are truly the eggs of the present species. I may add that the colouring of these eggs somewhat recalls that of those of the sub-Alpine and Sardinian warblers as figured by Mr. Bree. In some eggs the markings are much redder, and these eggs of course approach nearer to those of the Common Robin. They are, however, always browner, more dingy, and smaller than the eggs of this latter bird. The markings have a strong tendency to become confluent at the large end, where they are always most dense, and often exhibit a strongly marked but mottled and irregular cap. The eggs vary from 0·7 to 0·8 in length, and from 0·56 to 0·64 in breadth; but the average of eighteen eggs is 0·76 nearly by 0·6.

507.—*Larvivora cyanea, Hodgs.*

I never obtained the nest of the Indian Blue Wood-chat. Mr. Davison found it on the Nilghiris. He says: "I really quite forget the details of that one egg which I brought you along with the skin of the parent, but it was taken in May on the Nilghiris. I remember very well another nest of this species, which I took in the latter end of March or the beginning of April in a shola or detatched piece of jungle about 9 miles from Ootacamund.

"The nest was in hole in the trunk of a small tree, about 5 feet from the ground, and was composed chiefly of moss but mixed with dry leaves and twigs. It contained three young birds, apparently about four or five days old."

The egg taken by Mr. Davison is an elongated, slightly pyriform, oval. The shell is moderately fine, but with only a very slight gloss. The ground colour is a pale slightly greyish-green, and the whole egg is thickly (most thickly so about the large end, where the markings are almost perfectly confluent) mottled and streaked with pale brownish-red. It measures 0·98 by 0·67.

508.—*Nemura rufilata, Hodgs.*

I have never succeeded in finding a nest of the White-breasted Blue Wood-chat. In the hills north of Simla they breed, I believe, very high up. Writing of the Sutlej Valley, my friend Dr. Stoliczka says: "This species does not occur in summer to the west of Nachar and not below 8,000 feet. It breeds near Chini, and even here almost only near the limit of trees, at about 12,000 feet. It is often seen about Korzog in Rupshu, at an elevation of between 15 and 16,000 feet."

But further west in Cashmere they breed as low as 6,000 feet, and I have eggs taken there during the latter half of May and the first half of June. They breed there, it appears, in holes, making a nest of moss and grass lined with soft white grass.

From Cashmere Mr. Brooks noted that "this bird, like *Siphia leucomelanura,* breeds in the immature or female dress. I shot several pairs which were nesting, and saw others. Only one pair had the male mature, and differing from the female. It nests in holes in bank sides, under tree roots, or fallen tree trunks. The eggs, four in number, are bluish-white, very faintly marked towards the larger end with the palest reddish-brown. Those markings can only be seen upon a close inspection. Length, 0·74 by 0·56."

He obtained, if I remember right, only a single nest, and this was at Goolmergh, and on the 2nd June. Each of the three nests of which I have notes contained four eggs.

Mr. Brooks mentioned *in epist.*: "The shape of the egg is similar to that of other Robins, but diminishes rather more rapidly from the centre of the egg towards each end. The texture is smooth with a slight gloss, ground colour pale greenish-white, with some indistinct faint mottlings of very pale red at the larger end with a tendency to form a zone."

The eggs of this species are broad ovals, much compressed and pointed towards the small end, and at times somewhat pointed even towards the large end. They are white with a delicate green tinge, and towards the large end exhibit a faint zone of the most minute reddish-brown specks conceivable. The shell is very smooth and compact, has always a certain amount of gloss, which in some cases is very bright and decided. In length they vary from 0·69 to 0·74, and in breadth from 0·54 to 0·58; but the average of twelve is 0·71 by 0·56.

511.—*Tarsiger chrysæa, Hodgs.*

The Golden Bush-chat, according to Mr. Hodgson's notes, breeds in the central regions of the mountains of Nepal, and is shy, solitary, and bush-loving. It lays from three to four eggs, a pale verditer blue; regular oval eggs about 0·72 by 0·5; and makes its nest on the ground, in holes of rocks or banks, or at the base of some decaying tree. The nest is a compact saucer, composed of moss and moss-roots, and lined with sheep's wool and a few soft feathers. One nest obtained in August measured 4·62 in diameter and 1·87 in height externally; the cavity measured 2·75 in diameter and 1·12 in depth. This species apparently breeds from May to August.

513.—*Calliope pectoralis, Gould.*

Of the nidification of the White-tailed Ruby-throat nothing very authentic is known. A nest, said to belong to this species, was sent me from Native

Sikhim, where it was found in June in a deep crevice in a rock, at an elevation of about 12,000 feet. The nest is only a warm saucer shaped pad of *very* fine moss, and fern roots, closely felted together.

The eggs, of which it contained two, are regular ovals, slightly compressed towards the small end.

The shell is fine, but exhibits scarcely any gloss. In colour the eggs are a uniform pale salmon buff.

As these were brought in by native collectors, much reliance cannot be placed on them. At the same time all the eggs brought in by the same men with which we were previously acquainted were correct, and it is quite as likely as not that these may be so also, though Pallas says that those of the nearly allied *C. Kamtschatkensis* are greenish.

The eggs measure 0·9 and 0·91 in length, and 0·67 and 0·66 in breadth, respectively.

515.—*Calamodyta stentoria, Hemp. & Ehr.*

Mr. Blanford has recently pointed out that our Large Reed-warbler (*brunnescens*, Jerd.) must stand under the above name.

Very little is known of its nidification within our limits; only in Cashmere have its nests been obtained, and there as yet, so far as I know, only by Mr. Brooks and Captain Cock. Common, as it is, my own collectors failed to get eggs, though they brought plenty of nests.

The nest is a very deep massive cup hung to the sides of reeds. A nest before me, taken in Cashmere on the 10th June, is an inverted and slightly truncated cone. Externally it has a diameter of 3¼ inches and a depth of nearly 6 inches. It is massive but by no means neat; composed of coarse water-grass, mingled with a few dead leaves and fibrous roots of water plants. The egg cavity is lined with finer and more compactly woven grass, and measures about 1¾ inch in diameter and 2¼ inches in depth.

It breeds in May and June; at the beginning of July all the nests either contained young or were empty. Four is the full complement of the eggs.

Mr. Brooks noted *in epist.*:—

"*Srinuggur, 10th June.*—I went out early this morning on the lake here to look for eggs of *Acrocephalus brunnescens*, but it came on to rain so heavily that I only partially succeeded. I took three nests, two with three eggs each, and one with four young ones, the latter half hatched. The eggs very much resemble large and boldly marked Sparrows' eggs. They are smaller than the eggs of *A. turdoides*, but very similar. The latter have larger clear spaces without spots than those of our bird. In either saw nor heard any other aquatic warbler."

Later in a paper on the eggs and nests he had obtained in Cashmere he stated that this species "breeds abundantly in the Cashmere lakes. The nest is supported, about 18 inches above the water, by three or four reeds, and is a deep cup composed of grasses and fibres. The eggs are four, very like those of *A. turdoides*, but the markings are more plentiful and smaller."

Captain Cock writes to me that "the *Large Reed-warbler* is very common in the reeds that fringe all the lakes in Cashmere. It breeds in June, builds a largish nest of dry sedge, woven round five or six reeds, of a deep cup form, which it places about 2 feet above the water. It lays four or five eggs, rather blunt ovals, equally blunt at both ends, blotched with olive and dusky grey on a dirty white ground."

The eggs of this species, as might have been expected, greatly resemble those of *A. turdoides*. In shape they are moderately elongated ovals, in some cases almost absolutely perfect, but generally slightly compressed towards one end. The shell, though fine, is entirely devoid of gloss.

The ground colour varies much, but the two commonest types are pale green or greenish-white and a pale somewhat creamy stone colour. Occasionally the ground colour has a bluish tinge.

The markings vary even more than the ground colour. In one type the ground is everywhere minutely, but not densely, stippled with minute specks, too minute for one to be able to say of what colour; over this are pretty thickly scattered fairly bold and well marked spots and blotches of greyish-black, inky purple, olive brown, yellowish-olive, and reddish-umber brown; here and there pale inky clouds underlay the more distinct markings. In other eggs the stippling is altogether wanting, and the markings are smaller and less well defined. In some eggs one or more of the colours predominate greatly, and in some several are almost entirely wanting. In most eggs the markings are densest towards the large end, where they sometimes form more or less of a mottled, irregular, ill defined cap.

In length the eggs vary from 0·8 to 0·97, and in breadth from 0·58 to 0·63; but the average of the only nine eggs that I measured was 0·89, nearly, by rather more than 0·61.

516.—*Calamodyta dumetorum, Blyth.*

The Lesser Reed-warbler breeds, I believe, for the most part along the course of the streams of the lower Himalayan and sub-Himalayan ranges, and in suitable localities on and about these ranges; such at least is my present idea. They are with us in the plains up to quite the end of March, and are back again by the last day of August, and during May at any rate they may be heard and seen everywhere in the valleys south of the first snowy range.

Mr. Brooks remarks that "this species was excessively common on the Hindoostan side of the Pir-pinjal Range, but I have never seen it in Cashmere. I think it breeds in the low valleys by the river sides, for it was in very vigorous song there at the end of May." This is my experience also, and probably while many may go north to Central Asia to breed, a good many remain in the localities indicated.

Captain Hutton says: "This species arrives in the hills, up to 7,000 feet at least, in April, when it is very common, and appears in pairs with something of the manner of a *Phylloscopus*. The note is a sharp *tchick, tchick,* resembling the sound emitted by a flint and steel.

"It disappears by the end of May, in which month they breed; but, owing to the high winds and strong weather experienced in that month in 1848, many nests were left incompleted, and the birds must have departed without breeding.

"One nest, which I took on the 6th May, was a round ball, with a lateral entrance; it was placed in a thick Barberry bush growing at the side of a deep and sheltered ditch; it was composed of coarse dry grasses externally and lined with finer grass. Eggs three and pearl white, with minute scattered specks of rufous, chiefly at the larger end. Diameter 0·62 by 0·5."

Captain Hutton sent me three eggs of this species. The eggs are otherwise unknown to me, and I describe them only on Captain Hutton's authority.

The eggs are rather broad ovals, very smooth and compact in texture, but with little or no gloss. They are pure white, very thinly speckled with reddish and yellowish brown, the markings being most numerous towards the large end, and even there somewhat sparse and very minute.

517.—*Calamodyta agricola, Jerd.*

The Paddy-field Warbler (which is so close to *C. palustris*, Bechst, of Europe that I have often doubted its validity as a species) nests apparently occasionally in May and June in the valleys of the Himalayas, the great majority probably going further north-west to breed.

Very little is known about the matter. I have shot the birds in the interior of the hills in May, but I have never seen a nest.

Mr. Brooks, however, says: "Near Shupyion (Cashmere) I found a finished empty nest of this truly aquatic warbler in a Rose-bush which was intergrown with rank nettles. This was in the road-side where there was a shallow stream of beautifully clear water. On either side of the road were vast tracts of paddy swamp, in which the natives were busily engaged planting the young rice plants. The nest strongly resembled that of *Curruca garrula.* The male with his throat puffed out was singing on the bush a loud vigorous pretty song like a Lesser White-throat's, but more varied. I shot the strange songster, on which the female flew from the nest. This was the only pair of these interesting birds that I met with. I think, therefore, that their breeding in Cashmere is not a common occurrence."

This nest, now in my collection, was found on the 13th June, at an elevation of about 5,500 feet, in the Valley of Cashmere. It is a deep, almost purse-like-cup, very loosely and carelessly put together, of moderately fine grass, in amongst which a quantity of wool has been intermingled.

519 *bis.—Dumeticola brunneipectus, Blyth.*

Mr. Hodgson gives a very careful figure of a female bird of this species, together with its nest and egg, but he labels it underneath *affinis.* As we know, he described *affinis* as having spots on the breast, but he further notes that at the same place at which he obtained the female, nest and eggs, he also got a male bird with spots on the breast; in fact, in other words, he seems to have come to the conclusion that *Dumeticola affinis* was the male and that *Dumeticola brunneipectus,* which he did not separately name, though he has beautifully figured it, was the female. I have specimens of both, but the sexes were not ascertained; still I doubt whether the two birds can possibly be merely different sexes of the same species. Anyhow, the female bird which he figures (No. 826) is really *brunneipectus,* and under that name I notice the nest and eggs on which the female figured was captured. Mr. Hodgson notes:—"*Gosainthan.*"—In the snows; female and nest.

"*August 2nd.*—Nest in a bunch of reeds placed slantingly; ovate in shape; aperture at one side; placed about half a foot above the ground, made of grasses and moss, 4 or 5 inches in diameter exteriorly, interiorly between 2 and 3 inches." The eggs are figured as moderately broad ovals, measuring 0·65 by 0·48, of a uniform deep cinabar red, reminding one of the eggs of *Prinia Stewarti* and *socialis,* but much deeper in colour.

522.—*Tribura luteoventris, Hodgs.*

A bird unquestionably belonging to this species, the Plain Brown Reed-warbler, was sent me along with a single egg from Native Sikhim. The bird was said to have been killed off the nest, (which was not preserved,) which was found, at an elevation of about 12,000 feet, in low brushwood about 3 feet from the ground.

The egg is a very regular, rather broad, oval, has only a faint gloss, and is of a very rich deep maroon red, slightly darker at the large end.

The egg measures 0·62 by 0·49.

523.—*Horornis fulviventer, Hodgs.*

Mr. Blyth long ago stated in the IBIS that this species was identical with *P. fuscatus.*

Subsequently I procured several specimens which were quite distinct from *fuscatus,* structurally as well as in plumage answering perfectly to Hodgson's description.

I wrote to Dr. Jerdon mentioning this fact, and he replied: "I also am not satisfied of the identity of this species with *Phylloscopus fuscatus.* I have recently got at Darjeeling what I take to be *Horornis fulviventer,* and it is somewhat smaller in all its dimensions, but I had not a typical *P. fuscatus* with which to compare it. Specimens measured $4\frac{3}{4}$ to $4\frac{7}{8}$ inches; expanse $6\frac{1}{2}$ inches; wing 2 to $2\frac{1}{16}$ inches. I procured the nest and eggs in July; the nest, cup-shaped, on a bank, composed of grass chiefly, with a few fibres; and the eggs, three in number, pinky white, with a few reddish spots."

It is certainly not *fuscatus* (though possibly some specimen of *fuscatus* in the British Museum may bear a label formerly attached to a bird of this species), nor any one of the other *Horornis* or *Horeites* included in Dr. Jerdon's work, all of which I have. Mr. Blyth possibly went by Mr. Hodgson's specimens in the British Museum, but some confusion has, it is known, somehow crept in amongst these; and I have no doubt myself that *fulviventer* is a good species, and that it was the nest and eggs of this species which Dr. Jerdon found.

526.—*Dumeticola fortipes,* Hodgs.*

Two nests and eggs, together with one of the parent birds, of the Strong-footed Hill-warbler were sent me from Sikhim. Both nests were found in thick brushwood or low jungle, at elevations of 5,000 to 5,500 feet, the one at Lebong on the 12th June, the other on another spur of the same hill in July.

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* Mr. Sharpe informs me that the type of *fortipes,* cannot be found in the British Museum, and that what I call "*fortipes,*" is there labelled *flaviventris.* *Flaviventris,* however, which I also have, is, as the drawings and notes show, quite distinct.

The nests were very similar—small massive cups, composed exteriorly of dry blades of grass and leaves, and lined internally with fine grass and a few feathers. Both nests exhibit this lining of feathers, so that it is no accident but a characteristic of the bird's architecture. In one nest a good deal more of the fine flower-panicle stems of grasses are intermingled than in the other. Externally the nests are about 4·5 in diameter and 2·5 in height; the cavity 2 inches in diameter and about 1·25 in depth.

The eggs, (each nest contained four,) are, *sui generis*, moderately broad regular oval eggs with a decided but not brilliant gloss, and of a nearly uniform chocolate purple. The eggs of one nest are of a slightly deeper shade than those of the other, probably in consequence of one set being more incubated than the other.

I do not entertain the slightest doubt of these nests and eggs.

The eggs vary in length from 0·66 to 0·69, and from 0·49 to 0·52 in breadth.

527 *bis.—Horeites pallidus. Brooks.*

The Pale Hill-warbler breeds in Cashmere, according to Mr. Brooks, during May. I know nothing either of the bird or its nidification myself. I have never even closely examined a specimen, and merely accept the species on Mr. Brooks's authority.

He tells me that he found a nest on the 25th May at Kangan in Cashmere.

Mr. Brooks writes: "The nest of *Horeites pallidus*, which I found near Kangan in Cashmere, up the Sind Valley, was placed in tangled brushwood, and was about 5 feet above the ground. It was on a slightly sloping bank, and close to the edge of patch of jungle, not far from the right bank of the river.

"It was composed of coarse dry grass externally, with fine roots and fibres towards the inside of the nest, and was profusely lined with feathers. It was large for the bird, being 7 or 8 inches in external diameter, of a globular form, with the entrance at the side. I don't remember the size of the cavity of the nest, but its walls were very thick.

"In external appearance it was rough and clumsy, and looked more like a Sparrow's nest than that of a small Sylvine bird. The entrance was about 1¾ inch in diameter, and was with the interior of the nest neat and strong. *Horeites pallidus* occurs at from 5,600 feet elevation up to 7,000 and even 8,000 feet. It was abundant at Suki up the Bhagirutti Valley, and I heard of one even at Gangootree."

The shape of the egg is peculiar, being rather flattened in outline at the sides and then suddenly rounded at the smaller end. There is a considerable amount of gloss on the surface of the egg, which is of a dull purple brown, rather darker in tint at the large end. There are a very few indistinct cloudy markings of brown scattered here and there over the egg. In general appearance the egg puts one in mind of a *Prinia's*.

The egg measured 0·64 by 0·49.

629.—*Horeites major, Hodgs.*

A nest said to belong to the Large Hill-warbler was sent in with one of the parent birds in July from near Lachung in Native Sikhim, where it was found at an elevation of about 14,000 feet. It was placed at a height of about a foot from the ground in a stunted thorny shrub common at these high elevations. It was a very warm little cup, about 3 inches in diameter, composed of the finest fern and moss-roots, tiny fern leaves, wool, and numbers of the coarse white crinkly hairs of the Burhel. It contained three fresh eggs, regular, slightly elongated, ovals, a little pointed towards the small end, the shell fine and compact, but with scarcely any gloss.

The ground colour is white with a faint greenish-blue tinge, and on the larger half of the egg excessively minute specks of brownish-red are thinly sprinkled, except just at the crown of the egg, where the specks are denser and exhibit a tendency to form a tiny cap. On the smaller half of the egg very few, if any, specklings are to be traced.

In length the eggs measure 0·7 and 0·71, and in breadth 0·53 to 0·55.

530.—*Orthotomus longicaudus, Gmel.*

The Indian Tailor-bird breeds throughout India and Burmah, alike in the plains and in the hills, (*e. g.*, the Himalayas, Nilghiris, and Pegu Hills) up to an elevation of from 3,000 to 4,000 feet.

The breeding season lasts from May to August, both months included; but in the plains more nests are to be found in July, and in the hills more, I think, in June, than during the other months.

The nest has been often described and figured, and, as is well known, is a deep soft cup enclosed in leaves which the bird sews together to form a receptacle for it.

It is placed at all elevations, and I have as often found it high upon a Mango tree as low down amongst the leaves of the edible Egg plant (*Solanum esculentum.*)

The nests vary much in appearance, according to the number and description of leaves which the bird employs, and the manner in which it employs them; but the nest itself is usually chiefly composed of fine cotton wool, with a few horse-hairs and, at times, a few very fine grass stems as a lining, apparently to keep the wool in its place and enable the cavity to retain permanently its shape.

I have found the nests with three leaves fastened, at equal distances from each other, into the sides of the nest, and not joined to each other at all.

I have found them between two leaves, the one forming a high back and turned up at the end to support the bottom of the nest, the other hiding the nest in front and hanging down well below it, the tip only of the first leaf being sewn to the middle of the second. I have found them with four leaves sewn together to form a canopy and sides, from which the bottom of the nest depended bare; and I have found them between two long leaves, whose sides from the very tips to near the peduncles were closely and neatly sewn together. For sewing they generally use cobweb; but silk from cocoons, thread, wool, and vegetable fibres are also used.

The eggs vary from three to four in number; but I find that out of twenty-seven nests containing more or less incubated eggs, of which I have notes, that exactly two-thirds contained only three and one-third four eggs.

About the colour of the eggs there has been some dispute, but this is owing to the birds laying two distinct types of eggs, which will be described below. Hutton's and Jerdon's descriptions of the eggs, *white* spotted with rufous or reddish-brown, are quite correct, but so are those of other writers, who call them *bluish-green*, similarly marked. Tickell, who gives them as "pale greenish-blue, with irregular patches, especially towards the larger end, resembling dried stains of blood, and irregular and *broken lines scratched round*, forming a zone near the larger end," had of course got hold of the eggs of a *Drymoipus*. I have taken hundreds of both types, and I note that, as in the case of *Buchanga albirictus*, eggs of the two types are never found in the same nest. All the eggs in each nest always belong to one or the other type.

The parent birds that lay these very different looking eggs certainly do not differ, that; I have positively satisfied *myself*.

I quote an exact description of a nest which I took at Bareilly, and which was recorded on the spot:—

"Three of the long ovato-lancolate leaves of the Mango, whose peduncles sprang from the same point, had been neatly drawn together with gossamer threads run through the sides of the leaves and knotted outside, so as to form a cavity like the end of a netted purse, with a wide slit on the side nearest the trunk beginning near the bottom and widening upwards. Inside this, the real nest, nearly 3 inches deep and about 2 inches in diameter, was neatly constructed of wool and fine vegetable fibres, the bottom being thinly lined with horsehair. In this lay three tiny delicate bluish-white eggs, with a few pale reddish-brown blotches at the large ends, and just a very few spots and specks of the same colour elsewhere."

Dr. Jerdon says: "The Tailor-bird makes its nest with cotton, wool, and various other soft materials, sometimes also lined with hair, and draws together one leaf or more, generally two leaves, on each side of the nest, and stitches them together with cotton, either woven by itself, or cotton thread picked up, and after passing the thread through the leaf, it makes a knot at the end to fix it. I have seen a Tailor-bird at Saugor watch till the native tailor had left the verandah where he had been working, fly in, seize some pieces of the thread that were lying about, and go off in trumph with them; this was repeated in my presence several days running. I have known many different trees selected to build in; in gardens very often a Guava tree. The nest is generally built at from 2 to 4 feet above the ground. The eggs are two, three, or four in number, and in every case which I have seen were white spotted with reddish-brown chiefly at the large end............. Layard describes one nest made of cocoanut fibre entirely, with a dozen leaves of Oleander drawn and stitched together. I cannot call to recollection ever having seen a nest made with more than two leaves .... Pennant gives the earliest, though somewhat erroneous, account of the nest. He says: "The bird picks up a dead leaf, and surprising to relate sews it to the side of a living one."

I have often seen nests made between many leaves, and I have seen plenty with a dead leaf stitched to a yet living one; but in these points my experience entirely coincides with that of Mr. A. Anderson, whose note I proceed to quote:—

"The dry leaves that are sometimes met with attached to the nest of this species, and which gave rise to the erroneous idea that the 'bird picks up a dead leaf, and, surprising to relate, sews it to the side of a living one,' are easily accounted for.

"I took a nest of the Tailor-bird a short time ago (11th July 1871) from a Brinjal plant (*Solanum esculentum*), which had all the appearance of having had dry leaves attached to it. The nest originally consisted of *three* leaves, but two of them had been pierced (in the act of passing the thread through them) to excess, and had in consequence not only decayed *but actually separated from the stem of the plant*. These decayed leaves were hanging from the side of the nest by a mere thread, and could have been removed with perfect safety. Perhaps instinct teaches the birds to injure certain leaves in order that they may decay?

"Jerdon says that he does not remember ever having seen a nest made with more than *two* leaves. I have found the nest of this species vary considerably in appearance, size, and in the number of leaves employed, and, I would also add, in the site selected, as well as in the markings of the eggs, which latter never exceed four in number.

"The nest already described was built hardly 2 *feet off the ground*, was rather clumsy (if I might use such an expression), and was composed of *three* leaves. The eggs were white, covered with brownish-pink blotches, almost coalescing at the large end. Another nest, taken in my presence (July again, which is the general time) from the *very top of a high tree*, was enclosed inside of *one* leaf, the sides being neatly sewn together, and the cavity at the bottom lined with wool, down, and horse-hair. These eggs (four) are covered chiefly at the larger ends with minute red spots.

"A third nest seen by me was composed of *seven* or *eight leaves*."

Captain Hutton tells us that he has seen many nests. All were "composed of cotton, wool, vegetable fibre, and horse-hair, formed in the shape of a deep cup or purse, enclosed between two long leaves, the edges of which were sewed to the sides of the nest, in a manner to support it, by threads spun by the bird."

He adds that the birds, though common at their bases, do not ascend the hills; but this is a mistake, for I have repeatedly taken nests at elevations of over 3,000 feet, and Mr. Gammie, writing from Sikhim, says: "We often find nests of this species near my house at Mongphoo (which is at an elevation of about 3,500 feet). I took one there on the 16th May, which contained four hard-set eggs. It was in a Calicarpa tree and between two of its long ovate leaves, the terminal halves of which were sewn together by the edges, so as to form a purse in which the real nest was placed. Yellow silk of some wild silk-worm was the sewing material used."

Again, writing from the Nilghiris, Miss Cockburn remarks: "The Tailor-bird is seldom met with on the highest ranges, but appears to prefer the warmer climates enjoyed at the elevation of about 3,500 or 4,000 feet.

"They often build in the Coffee trees; a nest now before me was built on a Coffee tree, two of the leaves of which were bent down and sewn together. The threads are of cobweb, and the cavity is lined with the down of seed pods and fine grass. At the back of the nest the leaves are made to meet but are a little apart in front, so as to form an opening for the birds to hop in and out. The depth of the nest inside is 2½ inches. It was found in the month of June and contained four eggs, which were white, spotted with light red."

Mr. Oates remarks: "This is a common bird in the plains, and possibly also on the hills, though I did not observe it on the latter. I found the nest of this species containing young birds in the Thayetmyo cantonment on the 12th August. In the Pegu plains, near Wan, I found nests (one containing two eggs) early in June."

The eggs are typically long ovals, often tapering much towards the small end. The shells are very thin, delicate, and semi-transparent, and have but little gloss.

The ground colour is either reddish-white or pale bluish-green. Of the two types, the reddish-white is the more common in the proportion of two to one. The markings consist of bold blotchings or sometimes ill defined clouds (in this respect recalling the eggs of *D. terricolor*), chiefly confined to the large end, and specks, spots, and splashes, extending more or less over the whole surface, typically of a bright brownish-red, varying however in different examples both in shade and intensity. The markings have a strong tendency to form a bold, irregular, zone or cap at the large end, and in some specimens the markings are entirely confined to this portion of the egg's surface.

The eggs, which have a reddish-white ground, though smaller and of a much more elongated shape, closely resemble those of *Suya fuliginosa*.

In length the eggs vary from 0·6 to 0·7, and in breadth from 0·45 to 0·5; but the average of fifty eggs measured is 0·64 by 0·46.

531.—*Orthotomus coronatus, Jerd. & Blyth.*

Dr. Jerdon says: "A nest and eggs were brought to me, said to be those of this bird, similar to that of the last, but not so carefully made. The leaves were loosely attached and with fewer stitches. The eggs were two in number, white, with rusty spots."

532.—*Prinia flaviventris, Deless.*

Of the Yellow-bellied Wren-warbler's nidification I know personally nothing.

Tickell describes the nest as pensile but quite open, being a hemisphere with one side prolonged, by which it is suspended from a twig. The eggs, he says, are bright brick-red without a spot.

Mr. H. C. Parker tells me that "this bird breeds in the Salt Water Lake, or rather on the swampy banks of the principal canals that intersect it. The nest is nearly always placed on an Ash-leafed shrub-like plant growing on the banks of the canal and overhanging the water. One taken on the 26th July 1873, containing four nearly fresh eggs, was almost touching the water at high tide. The male has the habit, when the female is sitting, of hopping to the extreme point of a tall species of cane-like grass which grows abundantly in these swamps, whence he gives forth a rather pleasing song, erecting his tail at the same time, after which he drops into the jungle and is seen no more. It is almost impossible to make him show himself again."

The nest which I owe to Mr. Parker, and which was found in the neighbourhood of the Salt Water Lake, Calcutta, on the 26th July, is of an oval shape, very obtuse at both ends, measuring externally 4 inches in length and about 2¾ inches in diameter. The aperture, which is near the top of the nest, is oval, and measures about an inch by 1½ inch. The nest is fixed against the side of two or three tiny leafy twigs to which it is bound lightly in one or two places with grass and vegetable fibre, and two or three leafy lateral twiglets are incorporated into the sides of the nest, so that when fresh it must have been entirely hidden by leaves. The nest was in an upright position, the major axis perpendicular to the horizon. It is a very thin, firm, close, basket-work of fine grass, flower-stalks, and vegetable fibre, and has no lining, though the interior surface of the nest is more closely woven, and of still finer materials than the outside. The cavity is nearly 2½ inches deep, measuring from the lower edge of the entrance, and is about 2 inches in diameter.

The eggs are of the well-known *Prinia* type—broad regular ovals of a nearly uniform mahogany red, and very glossy. To judge from the few specimens I have seen, the eggs average a good deal smaller, and are somewhat less deeply coloured, than those of *P. socialis* or *Stewarti.* The eggs vary from 0·52 to 0·6 in length, and from 0·43 to 0·48 in breadth.

During this present year (1874) Mr. Parker obtained several more nests of this species, all built in the low jungle that fringes the mud banks of the congeries of channels and creeks that are known in Calcutta by the name of the "Salt Lake."

This jungle consists chiefly of the blue-flowered Holly-leaved *Acanthus ilicifolia* and of the trailing semi-creeper-like *Derris scandens.* It is in amongst the drooping twigs of this latter that the nest is invariably made.

The nests vary a good deal in shape; some are regular cylinders rounded off at both ends, with the aperture on one side above the centre; a small oval entrance neatly worked. Such a nest is about 4·5 in length, externally from top to bottom, and 2·75 in diameter; the aperture 1·3 in height, and barely 1·0 in width.

Others are more egg-shaped, still with a similar aperture near the top, and others are more purse-like. The material used appears to be always much the same—fine dry grass stems intermingled with blades of grass, and here and there dry leaves of some rush, a little seed down, scraps of herbaceous plants, and the like, the interior, always of the finest grass stems, neatly arranged and curved to the shape of the cavity. The nests are firmly attached to the drooping twigs, to and between which they are suspended, sometimes by fine vegetable fibre, but more commonly by cobwebs and silk from cocoons, a good deal of both of which are generally to be seen wound about the surface of the nest near the points of suspension or attachment.

Four appears to be the full number of the eggs.

Mr. Eugene Oates also found this species breeding this year, and took a nest, containing two eggs, at Wan, near Pegu, on the 13th May. His nest appears to have been more globular in shape than those we found, and to have had a larger proportion of grass seed down incorporated in its texture.

533.—*Prinia Adamsi, Jerd.*

Mr. W. F. Blanford identifies some birds obtained by Mr. Fairbank near Ahmednuggur with the above species, and gives the subjoined account of its nidification. I must say that I am unable to endorse this identification. I cannot help suspecting from his description that Mr. Blanford's birds were nothing but *Drymoipus terricolor*, nobis, and I submit that they do not correspond in the smallest degree with Adams's original discription.

However, Mr. Blanford is a most competent authority, and has every right to be listened to with deference. He says: "*Prinia Adamsi.*—Rather more than two years ago Mr. Fairbank collected specimens at Wadale (in the Upper Godavery Valley, near Ahmednuggur and about 150 miles east of Bombay), which he looked upon as belonging to this species, and with his usual liberality he left four specimens and the nest in my hands for more complete description.

The nest is of grass, shaped somewhat like a soda-water bottle, with an entrance at the side near the top. It is suspended from the leaves of the Bajera (*Holcus spica*), a cereal largely grown in the Deccan and, in fact, throughout a large portion of India. The bird breeds in October, and lays four eggs, measuring 0·6 in length, greenish-blue in colour, with dark red brown blotches and irregular twisted lines at the larger end. The birds are found throughout the year, like other *Drymœcæ*, haunting high grass, bushes, and grain-fields. I am indebted to Mr. Fairbank for all these details."

534.—*Prinia socialis, Sykes.*

The Ashy Wren-warbler breeds throughout the southern portion of the Peninsular and Ceylon, alike in the low country and in the hills, up to an elevation of nearly 7,000 feet.

The breeding season extends from March to September, but I am uncertain whether they have more than one brood.

Dr. Jerdon says: "Colonel Sykes remarks that this species has the same ingenious nest as *O. longicanda.* I have found the nest on several occasions, and verified Colonel Sykes's observations; but it is not so neatly sown together as the nest of the true Tailor-bird, and there is generally more grass and other vegetable fibres used in the construction. The eggs are usually reddish-white, with numerous darker red dots at the large end often coalescing, and sometimes the eggs are uniform brick-red throughout."

Now, first as regards the eggs, it is clearly wrong to say that the eggs are usually reddish-white; that such eggs, as exceptions, may have occurred I do not doubt, but I have seen more than fifty eggs of this bird taken by Miss Cockburn, Messrs. Carter, Davison, Wait, Theobald and others, and all were without exception mahogany or brick red, at times mottled, somewhat paler and darker here and there, but making no approach, even the most distant, to what Dr. Jerdon says is the *usual* type. Moreover, I have taken *many hundreds* of the eggs of *P. Stewarti* (the northern rather smaller form), which is not only *most* closely allied but really *very* doubtfully distinct, and yet I never met with one single egg of this type. At the same time Mr. Swinhoe (Ibis, 1860, p. 50) tells us that *P. sonitans* also at times exhibits a reddish-white egg, so that I do not for a moment question that Dr. Jerdon had seen such eggs, only it must be understood that, so far from constituting the *usual type,* it is in reality a most abnormal and rare variety. Out of eight correspodents who have collected for me in Southern India, I cannot learn that any one has ever yet even seen an egg of this type.

As regards the nest, like *P. Stewarti,* this species often constructs a Tailor-bird nest, the true nest being filled in between two or more leaves carefully stitched together to the nest, but it also like that species often builds a very different structure.

A nest now before me, sent from Conoor, is a loosely made cup—a very slight fabric of grass stems, matted with a quantity of the downy seed of some flowering grass and with a lining of fine grass-roots. It is an irregular cup about $2\frac{1}{2}$ inches in diameter and 2 inches in depth.

Four seems to be the regular number of the eggs.

From Kotagherry Miss Cockburn writes that "the Ashy Wren Warbler builds a neat little hanging nest very much in the Tailor-bird style, for it draws the leaves of the branch on which the nest is constructed close together, and sews them so tightly as sometimes to make them nearly touch each other, while a small quantity of fine grass, wool, and the down of seed pods is used as a lining and also placed between the leaves. These nests are built very low and contain three *beautiful* little bright red eggs, a shade darker at the thick end. They are easily discovered, for the birds get so agitated if any one approaches the bush on which they have built that they invariably attract one to the very spot they most wish to conceal. They build in the months of June and July."

Mr. Davison says: "This bird breeds on the Nilghiris in March, April, and May, and sometimes as late as the earlier part of June. The nest is generally placed low down near the roots of a bush or tuft of grass. It is made of grass beautifully and closely woven, domed, and with the entrance near the top. The eggs, three or four in number, are of a deep brick-red, darker at the larger end, where there is generally a zone, and are very glossy. I once obtained a nest made of grass and bits of cotton, but instead of being built as above described, it was placed between, and sewn to, two leaves of the *Datura stramonium.* It contained three eggs of a deep brick-red; in fact, precisely like those described above."

Mr. Wait tells us that "in September I found two nests, the one deeply cup-shaped the other domed, both constructed of similar materials. The latter of the two was placed at the bottom of a large bunch of Lemon grass, and was constructed of root fibre and grass, grass bents, and down of Thistle and Hawkweed, all intermixed. Exteriorly it measured between 3 and 4 inches in diameter. The nests contained three and five eggs, all highly glossy and of deep brownish-red, deeper than brick-red, mottled with a still deeper shade."

Mr. W. V. Legge, writing from Ceylon, tells us that "*P. socialis* breeds with us in the commencement of the S. W. monsoon during the months of May, June, and July. It nests in long grass on the Patnas in the Central Province, in Guinea grass-fields, and in sugar-cane brakes where these exist, as in the Galle District for instance. I can scarcely imagine that Jerdon is correct about this warbler's nesting.

"Nothing can be more un-Tailor-bird-like than the nest which it builds in *this* country, and this led me to think that ours was a different species until my specimens were identified by Lord Walden. In May 1870 a pair resorted to a large Guinea grass-field, attached to my bungalow at Colombo, for the purpose of breeding. I soon found the nest, which was the most peculiarly constructed one I have ever seen. It was in fact an almost shapeless ball of Guinea grass-roots, *thrown* as it were between the upright stalks of the plant at about 2 feet from the ground—I say "thrown," because it was scarcely attached to the supporting stalks at all. It was formed entirely of the roots of the plant which, when it is old, crop out of the ground and are easily plucked up by the bird, the bottom or more solid part being interwoven with cotton and such like substances to impart additional strength. The entrance was at the side in the upper half, and was tolerably neatly made; it was about an inch in diameter, the whole structure measuring about 6 inches in depth by 5 inches in breadth. I found the nest in a partial state of completion on the 10th of May; by the 19th it was finished and the first of a clutch of three eggs laid. The nest and eggs were both taken on the evening of the 24th, and the following day another was commenced close at hand. This was somewhat smaller, but constructed in the same peculiar manner as the first. This was completed, and the first of another clutch of them laid. The eggs are somewhat pointed at the smaller end, and of an almost uniform dull, mahogany, ground colour, showing indications of a paler underground at the point."

Birds like these that build half-a-dozen different kinds of nests ought to be abolished: they lead to all kinds of mistakes and differences of opinion, and are more trouble than they are worth.

As for the eggs it is unnecessary to describe them; they are precisely similar to those of *P. Stewarti*, fully described below. All that can be said is that, as a body, they are slightly larger, and *possibly*, as a *whole*, the least shade less dark. In length they vary from 0·52 to 0·72, and in breadth from 0·45 to 0·52; but the average of twenty-one eggs measured is 0·64 by rather more than 0·47.

535.—*Prinia Stewarti*, *Blyth*.

Stewart's Wren-warbler is one of those forms in regard to which at present great difference of opinion prevails as to whether or no they merit specific separation. *Stewarti* from the N. W. Provinces and *socialis* from the Nilghiris differ only in size; the latter is somewhat more robust, and probably weighs one-fifth more than the former. But then in the Central Provinces you meet with intermediate sizes, and I have plenty of birds which might be assigned indifferently to either race as a rather small example of the one or a rather large one of the latter. I myself consider all to belong to one species, but as this is not the general view I have kept my notes on their nidification separate.

This species or race breeds almost throughout the plains of Upper India and in the sub-Himalayan ranges to an elevation of 3,000 or 4,000 feet. In the plains the breeding season extends from the first downfall of rain in June (I have never found them earlier) to quite the end of August. In the moist sub-Himalayan region, the Terais, Dhoons, Bhaburs, and the low hills, they commence laying nearly a month earlier.

This species often constructs as neatly sown a nest as does the *Orthotomus*; in fact, many of the nests built by these two species so closely resemble each other that it would be difficult to distinguish them were there not very generally a difference in the lining. With few exceptions all the innumerable nests of *O. longicaudus* that I have seen were lined with some soft substance—cotton-wool, the silky down of the cotton tree (*Bombax heptaphyllum*), grass down, soft horse-hair, or even human hair, while the nests of *P. Stewarti* are almost without exception *lined* with fine grass-roots.

Our present bird does not, however, invariably construct a "tailored" nest. When it does, like *O. longicaudus*, it sews two, three, four, or five leaves together, as may be most convenient, filling the intervening space with down, fine grass, vegetable fibre, or wool held firmly into its place by cross-threads, sometimes composed of cobwebs, sometimes made by the bird itself of cotton, and sometimes apparently derived from unravelled rags. It also, however, often makes a nest entirely composed of fine vegetable fibre, cotton, and grass down, and lined as usual with fine grass-roots. Sometimes these nests are long and purse-like and sometimes globular, either attached to, or pendant from, two or more twigs. One nest before me, a sort of deep watch-pocket, suspended from five twigs of the Jhao (*Tamarix dioica*), measures externally 2·75 inches in diameter, is a good deal longer at what may be called the back than the front, and at the back is fully 5·5 long. Internally the diameter is about 1·5 and the cavity, measuring from the lowest portion of the external rim, is 2·5. This is a *very* large nest. Another, built between three leaves, has an external diameter of about 2½ inches, and is externally not above 3 inches long. It is unnecessary here to describe the beautiful manner in which, when it makes use of leaves, this bird sews them together, as this has already been well described by others where *O. longicaudus* is concerned, and *P. Stewarti* is, in some cases, when forming a nest with leaves, fully as neat a workman.

The nests vary so much, and I have heard so much discussion about them, that having seen at least an hundred and having taken full notes of some twenty of these, I shall reproduce a few of these notes :—

"*Agra, July* 17*th.*—Two nests, the one nearly globular, composed entirely of fibrous roots, hair, wool and thread, and lined with fine grass, suspended by a few fibres and hairs between the fork of a branchlet in a little dense bush of Indian Box ; the other, suspended from a tendril of an Elephant creeper, was principally formed by one of the leaves of this, to which to form the remaining third of the exterior a second leaf of the same plant was carefully sewn. Interiorly there was a little wool, and at the bottom fine grass.

"*July* 20*th.*—On a Furash tree (*Tamarix furas*), beautifully made of fine soft wool, shreds of tow and string, very fine grass and grass-roots, and the bottom neatly lined with very fine grass-roots. In shape the nest is like one-half of a long old fashioned silk purse, round bottomed and very compact, with a long slit-like opening on one side towards the top. It contained five eggs.

"*July* 26*th.*—Two nests, one formed almost entirely in a single Mango leaf, the sides of which are curled round so as nearly to meet, and then laced by a succession of cross-threads of cobweb, carefully knotted at each place where the margin of the leaf is pierced. The intervening space is closed by fine tow, wool, and the silky down of the Cotton tree, with just the top of a small Mango leaf caught in from above so as to form an arched roof. The other nest was rounder in form, having less of a leafy structure. It had, however, the leaf of the *Phalsa* forming the back and sides (partly), whilst the whole of the front was composed of soft wool, tow, dry grass-roots, thread, and a few pieces of the soft tree cotton. It had a neighbouring leaf just caught in on one side. This contained four fresh eggs.

"*July* 30*th.*—A beautiful nest between three twigs, several of the leaves of each of which had been tacked on to the outside of the nest. The nest itself was firmly put together with fine grass-roots, and was nearly globular in shape with one side continued upwards into a sort of hood overhanging the greater portion of the aperture. It contained four eggs of the usual deep red colour.

"*August* 8*th.*—At Bichpoori found a number of nests, and some of them of a strangely different type. One was inside a tiny hut on the Line, about 3 feet above the head of the chaprassie's bed. It had no leaves about it, and was composed of thread, wool, and few very fine grass stems, and lined thinly with fine grass stems and a little black horse-hair. It was about two-thirds of a sphere, the external diameter of which was about 3¼ inches and the internal 2½ inches. The bird was on the nest so that there could be no mistake, otherwise it would have been impossible to believe that it belonged to *P. Stewarti* of which we have taken so many sewn in leaves. A little further on another nest of the same species, built in the ragged eaves of a thatch, externally composed almost entirely of cotton wool, with a little tow fibre binding the structure together, internally as usual lined with very fine grass-roots with a few horse-hairs. Another nest of the *Prinia* was in one respect even more remarkable. It was built in the usual situation in a low herbaceous plant, sewed to, and suspended from, two leaves, and two or three others worked into its sides. It was constructed almost entirely of fine grass-roots and fibres, with a few tiny tufts of cotton wool, and the leaves as usual firmly tacked on with threads and cobweb fibres. It would seem that, after constructing the nest but before laying, a large female spider took possession of the bottom of the nest, and shut herself in by constructing a diaphragm of web horizontally across the nest, thus occupying the whole of the cavity of the nest. The little bird accepted this change of circumstances, built the nest a little higher at the sides, and over the spider's web placed a false bottom of fine grass-roots on which she laid her four eggs, and there she was sitting when the nest was taken, the spider, alive and apparently happy in the cell below, plainly visible through the interstices of the grass, with a huge sack of eggs which she was incubating. Her chamber is fully one-half of the nest."

I may add that this latter nest, with the *now* dead spider, *in situ*, is still in our museum.

In number the eggs are sometimes four, sometimes five, and I have *heard* of six being found.

They rear usually two broods; if their eggs are taken they will lay three or four sets; sometimes they use the same nest twice; sometimes, directly the first brood is at all able to shift for themselves, the parents leave them in the old nest and commence building a new one at no great distance.

Mr. A. Anderson says: "Owing to the inclemency of the weather (August) the Geranium pots in the garden were placed in the verandah of the house I am at present living in, and, strange to say, a pair of these warblers commenced building in the leaves of one of the plants immediately under my window.

"When the nest was about half finished the birds forsook it without apparently any reason, as they were never molested in any way. On examining the nest, however, the cause was evident, and afforded a remarkable instance of instinct on the part of the little architects. The leaves that had been pierced and sewn together had actually commenced to *wither*, and in the course of a few days later the whole structure came down bodily.

"This is the only *Prinia* to be found at Futtehgurh, and they are one of our most common garden birds. Their beautiful brick-red eggs and neatly sewn nests are too well known to require description.

"Four generally, and five frequently, is the number of eggs they lay. I have *one* record of *six* on the 17th August 1873; in this case one egg was laid daily, the first having been laid on the 12th and the sixth on the 17th."

Captain Hutton remarks: "This is a true Tailor-bird in respect to the construction of the nest, which is composed of one leaf as a supporting base stitched to two others meeting it perpendicularly, the apices of all three being neatly sown together with threads roughly spun from the cottony down of seeds. Between or within these leaves is placed the nest, very slightly and loosely constructed of fine roots, grasss-talks and seed down, the latter material being interwoven to hold the coarser fibres of the nest together. There is no finer lining within, and the edges of the exterior leaves are drawn together round the nest and held there partly by roughly spun threads of down, and partly by the ends of the stiff fibres being thrust through them. The whole forms a very light and graceful fabric. Within this nest were four beautiful and highly polished eggs of a deep brick-red colour, darkest at the larger end, faint specks and blotches of a deeper colour being indistinctly discernible beneath the surface of the shell which shines as if it had been varnished. The nest is not closed above, but is open and deeply cup-shaped. This was taken in the Dhoon on the 30th May."

The eggs are ovals, as a rule, neither very broad nor much elongated. Pyriform examples occur, but a somewhat perfect oval is the usual type, and the examination of a large series shows that the tendency is to vary to a globular and not to an elongated shape. The eggs are brilliantly glossy, and, though considerably smaller, strongly resemble, as is well known, those of the little short-tailed *Cetti's Warbler*.

In colour they are brick-red, some however being paler and yellower, others deeper and more mahogany-coloured. There is a strong tendency to exhibit an ill defined cloudy cap or zone, of far greater intensity than the colour of the rest of the egg, at or towards the large end.

In length the eggs vary from 0·6 to 0·68, and in breadth from 0·45 to 0·5; but the average of seventy eggs measured is 0·62 by 0·46.

536.—*Prinia gracilis, Frankl.*

Dr. Jerdon says: "I found the nest of this species at Saugor, very like that of the Tailor-bird but smaller, made of cotton, wool, and various soft vegetable fibres, and occasionally bits of cloth, and I invariably found it sewn to one leaf of the *Kydia* so common in the jungles there. The eggs were pale blue, with some brown or reddish spots often rarely visible."

This of course is very different to the eggs of the ten-tail-feathered *Prinias, flaviventris, socialis,* and *Stewarti,* all of whose eggs are precisely similar, but it agrees well with the eggs of the other twelve-tailed-feathered *Prinias, cinereocapilla* and *Hodgsoni,* so far as our present information goes.

Now, it is very remarkable that in birds so precisely alike, except in this one particular, the slight difference in the number of the tail feathers should be accompanied by so great a difference in the character of the eggs.

337.—*Prinia cinereocapilla, Hodgs.*

Captain Hutton says: "In this species the structure of the nest is somewhat coarser than in *P. Stewarti,* and it is more loosely put together, but like that species it is also a true Tailor-bird.

"In the specimen before me two large leaves are stitched together at the edges, and between these rests the cup-shaped nest composed of grass-stalks and fine roots, as in *Stewarti*, and without any lining; while being more completely surrounded by, or enfolded in, the leaves, the cottony seed down, which binds together the fibres in the others, is here dispensed with.

"The eggs were three in number, of a pale bluish hue, irrorated with specks of rufous brown, and chiefly so at the larger end, where they form an ill defined ring.

"The eggs measured 0·62 by 0·44.

"The nest was found hanging on a large leafed annual shrub growing in the Dhoon, and was placed about 2 feet from the ground. It was taken on 22nd July."

538.—*Prinia Hodgsoni, Blyth.*

I have never myself succeeded in finding a nest of Hodgson's Wren-warbler, but my friend Mr. F. R. Blewitt has sent me no less than forty nests and eggs, with the parents, so that, although the eggs belong to two, I might even say three, very different types, I entertain no doubt that he is correct in assigning them to the same species, the more so that, though the eggs vary, the nests are identical. He has sent me several notes in regard to this species. He says: "On the 1st July, 3 miles south of the village of Doongurgurh in the Raipoor District, I found a nest of Hodgson's Wren-warbler, containing three fresh eggs. It was on rocky ground between a footpath and a water-course, about 2 feet from the ground, and firmly sewn to a single leaf of a Murori plant. The nest was constructed exclusively of very fine grass, with spiders' web affixed in places to the exterior. It was somewhat cup-shaped, 3·3 in depth and 2·4 in breadth externally. The egg cavity was about 1·4 in diameter, and about the same depth. The eggs were a delicate, pale, unspotted blue.

"About 100 yards from the first, a second precisely similar, and similarly situated, nest of this same species was found, which contained three hard-set eggs exactly similar in shape, texture, and ground colour to those in the first nest, but everywhere excessively, finely, and thickly speckled with red, the specks exhibiting a strong tendency to coalesce in a zone round the large end."

"On the 12th and 13th July we obtained ten nests of Hodgson's Wren-warbler, all in the neighbourhood of Doongurgurh. From what I have seen, I gather that this species breeds from the middle of June to the middle of August in this part of the country. They appear to resort to tracts at some little elevation, where the Murori and Kydia bushes are bundant, and where grass grows rapidly in the early part of the rains. The nests, very ingeniously made, are invariably sewn to one or two leaves in the centre of one of the above-named bushes, the entrance above, just as in an *Orthotomus'* nest. They are placed at heights of from a foot to 3 feet from the ground. Fine grass, vegetable fibres, and other soft materials are chiefly used in their construction, a little cobweb being often added. The eggs are laid daily, and four is the normal number, though three hard-set ones are sometimes found. The nest is prepared annually. As far as I know they have only one brood. Both parents unite in building the nest and in hatching and feeding the young.

"Of the ten nests now taken four contained speckled and six unspeckled eggs. The two types are never found in the same nest. I send all the nests, eggs, and birds."

The nests are regular Tailor-birds' nests, composed chiefly of very fine grass, about the thickness of fine human hair, with no special lining, carefully sewn with cobwebs, silk from cocoons, or wool, into one or two leaves, which often completely envelop it, so as to have no portion of the true nest visible.

The eggs belong to at least two very distinct types. Both are typically rather slender ovals, a good deal compressed towards one end; but in both somewhat broader, and more or less pyriform, varieties occur. In both the shell is exquisitely fine and glossy; in some specimens it is excessively glossy. In both the ground colour is a very delicate, pale, greenish-blue, *occasionally* so pale, that the ground is all but white, in one type entirely unspeckled and unspotted, in the other finely and thickly speckled everywhere, and towards the large end more or less spotted with brownish or purplish red. The markings are densest towards the large end, where they either actually form, or exhibit a strong tendency to form, a more or less conspicuous, speckled, semi-confluent zone.

Out of fifty-six eggs, twenty-one belong to the latter type. As in *Buchanga albirictus,* the two types never appear to be found in the same nest; but the nests in which the two types are found are precisely similar, and the parent birds are identical.

In length the eggs vary from 0·53 to 0·62, and in width from 0·4 to 0·45; but the average of fifty-six eggs is 0·58 by 0·42. There is no difference whatever in sizes of the two types.

539.—*Cisticola schœnicola, Bonap.*

The Rufous Grass-warbler, as Jerdon calls it, breeds pretty well all over India and Ceylon, confining itself, as far as my experience goes, to the low country, and never ascending the mountains to any great elevation.

The breeding season lasts, according to locality, from April to October, but it never breeds with us in dry weather, always laying during rainy months—very likely at the Nicobars, where it rains pretty well all the year round; March being the only fairly dry month, it may breed at all seasons.

I have myself taken several, and have had a great many nests sent to me. With rare exceptions all belonged to one type. The bird selects a patch of dense fine stemmed grass, from 18 inches to 2 feet in height, and, as a rule, standing in a moist place; in this, at the height of from 6 to 8 inches from the ground, the nest is constructed; the sides are formed by the blades and stems of the grass, *in situ,* closely tacked and caught together with cobwebs and very fine silky vegetable fibre. This is done for a length of from 2 to nearly 3 inches, and, as it were, a narrow tube, from 1· to 1·5 in diameter, formed in the grass. To this a bottom, from 4 to 6 inches above the surface of the ground, is added, a few of the blades of the grass being bent across, tacked and woven together with cobwebs and fine vegetable fibre. The whole interior is then closely felted with silky down, in Upper India usually that of the *Mudar* (*Calotropis Hamiltoni*). The nest thus constructed forms a deep and narrow purse, about 3 inches in depth, an inch in diameter at top, and 1·5 at the broadest part below. The tacking together of the stems of the grass is commonly continued a good deal higher up on one side than on the other, and it is through or between the untacked stems opposite to this that the tiny entrance exists. Of course above the nest the stems and blades of the grass, meeting together, completely hide it. The dimensions above given are those of the interior of the nest; its exterior dimensions cannot be given. The bird tacks together not merely the few stems absolutely necessary to form a side to the nest, but most of the stems all round, decreasing the extent of attachment as they recede from the nest cavity. It does this too very irregularly; on one side of the nest perhaps no stem more than an inch distant from the interior surface of the nest will be found in any way bound up in the fabric, while on the opposite side perhaps stems fully 3 inches distant, together with all the intermediate ones, will be found more or less webbed together. Occasionally but rarely I have found a nest of a different type. Of these one was built amongst the stems of a common prickly labiate marsh plant which has white and mauve flowers. There was a straggling frame-work of fine grass, firmly netted together with cobwebs, and a very scanty lining of down. The nest was egg-shaped, and the aperture on one side near the top. Mr. Brooks, I believe, once obtained a similar one; but the vast majority of of the others that any of us have ever got have been of the type first described, which corresponds closely with Pässler's account.

Five is the usual complement of eggs; at any rate I have notes of more than a dozen nests that contained this number, and in more than half the cases the eggs were partly incubated. I have no record of more than five, and though I have any number of notes of nests containing, one, two, three and four eggs, yet these latter in almost all these cases were fresh.

Mr. Blyth says that this species is "remarkable for the beautiful construction of its nest, *sewing* together a number of growing stems and leaves of grass, with a delicate Pappus which forms also the lining, and laying four or five translucent white eggs, with reddish-brown spots more numerous and forming a ring at the large end very like those of *Orthotomus longicauda*. It abounds in suitable localities throughout the country."

I must here note that Mr. Blyth never paid special attention to eggs, or he would have hardly said this, because the character of the markings are essentially different. Those of the Tailor-bird are typically *blotchy*, of the present species *speckly*.

Mr. W. Vincent Legge writes to me from Ceylon that "in the Western Province it breeds from May until September, and constructs its nest either in paddy-fields or in *Guinea* grass plots attached to bungalows.

"The nest is so beautiful and so neatly constructed that perhaps a short description of it will not be out of place. A frame-work of cotton or other fibrous material is formed round two or three upright stalks, about 2 feet from the ground, the material being sewn into the grass and passed from one stalk to the other until a complete net is made. This takes the bird from one to two days to construct*. Several blades, belonging to the stalks round which the cotton is passed, are then bent down and interlaced across to form a bottom on which and inside the cotton net-work a neat little nest of fine strips of grass torn off from the blade is built; this is most beautifully lined with cotton or other downy substance, which appears to be plastered with the saliva of the bird, until it takes the appearance and texture of soft felt.

"The average dimensions of the interior or cup are 2 inches in depth by 1¼ in breadth. The whole structure is generally completed in about five days, and the first egg laid on the fifth or sixth day from the commencement. The number of eggs varies from two to four, most nests containing three. The time of incubation is, as a rule, from nine to eleven days.

"I have found but little variation in the eggs of this species either as regards size or colour. They are white or pale greenish-white, spotted and blotched in a zone round the larger end with red and reddish-grey, a few spots extending towards the point: axis 0·63 inches; diameter 0·51 inches.

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* Numbers of these birds used to build in a Guinea grass field attached to my bungalow at Colombo, and I had full opportunity of watching the construction of the nest on many occasions.
W. V. L.

"From close observation I can certify that this and many other small birds do not, here, sit during the day-time. I scarcely ever found a *Cisticola* on the nest between sunrise and sunset."

I have taken the eggs of this bird myself on many occasions. I have had them sent me with the nest and bird by Mr. Brooks from Etawah and Mr. F. R. Blewitt from Jhansi. From first to last I have seen fully fifty authentic eggs of this species. All were of one and the same type, and that type widely different from any one of those that Dr. Bree, following European ornithologists, figures. Dr. Bree's three figures all represent a perfectly spotless egg—one pink, the other bluish-white, and the third a pretty dark bluish-green. Our eggs on the contrary are *spotted*; the ground is white, with, when fresh and unblown, a delicate pink hue, due not to the shell itself but to its contents, which partially show through it. Occasionally the white ground has a *faint* greenish tinge.

Every egg is spotted, and most densely so towards the large end, with, as a rule, excessively minute red, reddish-purple, and pale purple specks, thus resembling, though smaller, more glossy, and far less densely speckled, the eggs of *F. Buchanani*. These are beyond all question the eggs of our Indian species, and the only type of them that I have yet observed; but the question remains—is our Indian *Prinia cursitans*, Franklin, really identical with the European *C. schœnicola*, Bonaparte?—and this can only be settled by careful comparison of an enormous series of good specimens of each bird. For my part I personally have little doubts as to the identity of the two. At the same time differences in the eggs may indicate difference of species. Thus of the closely allied *C. volitans*, Swinhoe, the latter gentleman informs us that "the eggs of our bird vary from three to five, are thin and fragile, and of a pale clear greenish-blue." He called it *schœnicola* when he wrote, but he really referred to the Formosan bird which he has since separated.

The eggs of course vary somewhat. Of one nest I wrote at the time I found it—"The eggs are a rather short oval, slightly pointed at one end, with a white ground, thickly sprinkled with numerous specks and tiny spots of pale brownish-red. They measured ·58 by ·46." Of another I say—"The ground had a faint pearly tinge, and there was a well marked, though irregular and ill-defined, zone towards the large end, formed by the agglomeration there of multitudinous specks, which in places were almost confluent." Of another set—"The eggs were much glossier and had a China-white ground; but instead of a multitude of small specks over the whole surface, they had nearly the whole colouring matter gathered together at the large end in a cap of bold, almost maroon-red, spots, only a very few spots of the same colour being scattered over the rest of the egg."

The eggs measure from ·53 to ·62 in length, and from ·43 to ·48 in breadth; but the average dimensions of a large number measured were ·58 by ·46.

542.—*Drymoica bengalensis, Jerdon.*

Long ago the late Colonel Tytler gave me the following note on this species:—

"I shot these birds at Dacca in 1852, and sent a description and a drawing of them to Mr. Blyth. They were named after my esteemed friend Jules

Verreaux, of Paris. They are not uncommon at Dacca in grass jungle. I think the bird Dr. Jerdon gives in his "Birds of India" as *Graminicola bengalensis*, Jerdon, No. 542, p. 177, Vol. II, is meant for this species. The genus *Graminicola*, under which he places this bird, appears to be a genus of Dr. Jerdon's own, for it is not in Gray's genera and sub-genera of birds in the British Museum printed in 1855. If it is the same bird as Dr. Jerdon's, then my name, which I communicated in 1851-52 not only to Mr. Blyth but also to Prince Bonaparte and M. Jules Verreaux, and which was published in my fauna of Dacca, has it seems to me the priority."

The birds *are* identical. Jerdon gave me one of his Cachar specimens and I compared it with Tytler's types, and certainly Tytler's name was published ten years before Jerdon's (*vide* AN. & MAG. N. H., SEPT. 1854, p. 176); but no description was published, and I fear therefore that the name given by Colonel Tytler cannot be maintained, unless indeed, which I have been unable to ascertain, either Bonaparte or Verreaux figured or described the specimens Tytler sent them in some French work.

I have only one supposed nest of this species brought me from Dacca by a native collector who worked there for me under Mr. F. B. Simson. He did not take it himself; it was brought to him with one of the parent birds by a shikaree. The evidence is, therefore, very bad, but I give the facts for what they are worth.

The nest is a rather massive and deep cup, the lower portion prolonged downwards so as to form a short truncated cone. It is fixed between three reeds, is constructed of sedge and vegetable fibre firmly wound together and round the reeds, and is lined with fine grass-roots. It measures externally 5 inches in height and nearly 4 inches in diameter, measuring outside the reeds which are incorporated in the outer surface of the nest. The cavity is about 2½ inches in diameter and nearly 2 inches deep. It contained four eggs, hard-set; only one could be preserved, and that was broken in bringing up-country; so I could not measure it, but the shell was a sort of pale greenish-grey or dull greenish-white, rather thickly but very faintly speckled and spotted with very dull purplish and reddish brown, with some grey spots intermingled. The nest was obtained (no date noted) between the middle of July and the middle of August. I note that the eggs were on the point of hatching, so that the fresh egg would probably be somewhat brighter coloured.

543.—*Drymoipus inornatus*, *Sykes*.

Mr. B. Aitken sends me nest, eggs, and parent birds from Bombay of a *Drymoipus* answering *precisely* to Sykes's and Jerdon's description of *inornatus*, as different as possible from my *terricolor* (which is beautifully and most accurately figured in LAHORE TO YARKAND, Pt. XVII), and different again from the *Drymoipus* that I have provisionally though doubtfully identified as *fuscus*, Hodgson, and still more so from *longicaudatus*. The nest is precisely like that of *D. terricolor* and the other *Drymoipus* that I call for the present *fuscus*, and the eggs are precisely of the same type, but *wholly want the delicate tracery of lines* so specially characteristic of the eggs of these two species.

Now, Dr. Jerdon states that "the nest is very neatly woven with grass, nearly globular, with a hole at the side and lined with soft down, generally that of the *Calotropis gigantea*, and sometimes with feathers. It is firmly fixed to some of the thorny twigs of the bush, and it is impossible to remove it without cutting the supporting branches. The eggs are from two to four—bright pale blue, with large blotches of purplish-brown, one of the most beautiful eggs I know."

His omission to notice the *lines,* which always made me suspect that his bird and ours were different, would now seem to have resulted from no oversight. To judge from the five eggs sent by Mr. Aitken, the absence of these lines is a characteristic of the true *inornatus.*

But when Dr. Jerdon talks of the lining to the nest, we are again in difficulties; neither *terricolor* nor *fuscus* ever line their nests, and Mr. Aitken asserts positively that Bombay *inornatus,* the bird he sent me, *never* lines its nest.

The little *Drymoipi* terribly want reviewing. There are certainly four very closely allied races or species, and if *Drymoipus Adamsi* (*apud* Blanford, *nec* Jerdon, *vide supra p.* 335) is distinct, there are five beside the true *Jerdoni* and *fusca,* if the latter be distinct from the Nilghiri bird, and I much doubt whether any one living thoroughly knows them all.

Mr. B. Aitken says: "I found this nest, at Bombay, on the 13th October 1873, at the edge of a tank some 2 feet above the ground. I have found four or five precisely similar ones before, generally in similar situations. The nest was strongly attached to the stems and leaves of four herbaceous plants growing close together. In many cases the strips of grass had been passed through and pierced the leaves. The nest is deep and purse-shaped, the sides were prolonged upwards, except in front where the entrance was, and joined above so as to form a canopy. The nest has no lining, and none of the nests of this species that I ever saw have ever had any lining. The whole nest inside and out is composed of fine strips of blades of grass interwoven. The eggs, five in number, varied much in size. In colour they were bright blue, most irregularly blotched with various shades of purplish-brown: some of the blotches very large, some mere specks. Each egg had also washed out stains of blotches. The smaller eggs were by far the brighter.

"By reason of the roof and walls the entrance to the nest was at one side, but there was nothing that could be called a hole. The roof projected over the entrance, forming a porch.

"Six or eight nests which I have seen of this species and *D. longicaudatus* were all over water. But the birds are by no means confined to marshy localities.

"Even in the middle of the rains the nests are invariably made of dry yellow grass.

"One nest found in Berar was in a Babool bush, where of course there could have been no leaves pierced."

Mr. E. Aitken writes: "I have found a good many nests in Bombay, and it breeds in Poona too. My notes only mention two nests with eggs on the 22nd and 28th August, but I found some much later, and I am almost certain it begins to lay much earlier if not actually at the beginning of the monsoon, like *Orthotomus* and *Prinia.*

"It builds in gardens and cultivated fields, especially in the vicinity of water, and often among plants growing in water.

"The nest is very firmly attached to the twigs of some plant where long grass or other plants completely surround and conceal it. It is usually about 3 feet from the ground. It varies much in size and shape, some being much deeper than others, and some having the top open; others an entrance somewhat to one side.

"I have always found three or four eggs—bright blue with large irregular purplish-brown blotches and no hair lines. I should have said that the nest is a bag, very uniformly woven, of fine grass, and *never with any lining;* at any rate in none that I have ever found. They never use the same nest twice, always building a fresh one even if you only rob without injuring the first. I think they have only one brood in the year, but, like *Orthotomus* and *Prinia,* one or two nests are generally deserted or destroyed by some accident before they succeed in rearing a brood."

The eggs are of much the same type as those of *terricolor,* but differ, as already remarked, in entirely wanting that intricate tangle of spider web lines which encircles these latter. They are regular ovals, very slightly compressed towards one end, glossy, and with a delicate pale greenish-blue ground, richly blotched and spotted with blotches and spots of the most various sizes and of different shades of maroon, purplish-red, or brownish-red of varying intensity, accompanied, as correctly remarked by Mr. B. Aitken, by numerous pale stains as if of washed out blotches. In length the eggs varied from 0·53 to 0·6, and in breadth from 0·4 to 0·44.

543A.—*Drymoipus fuscus, Hodgs.*

I have not had time to work out the question thoroughly, but the Fuscous Wren-warbler that you obtain in the Deccan, on the Nilghiris, and again, though differing slightly, in Ceylon, is not the same as the very much *greyer* bird (greyer at all seasons, though both species vary in this respect) that we obtain throughout North-west India, and, *à fortiori,* not the same as Sykes's *inornatus.*

There is a race from Arracan, Cachar, Assam, and Nepal (how far farther west it spreads in the moist sub-Himalayan zone I have not ascertained) which is almost if not quite identical with the southern form, and this, I conceive, was Hodgson's *fusca,* and to avoid multiplication of names, pending a complete analysis of the group, I adopt for the present Hodgson's name for the Nilghiri birds also.

I do not say that any of the races really deserve, according to *my* views, specific separation; but they are far more distinct than a vast number of the races now-a-days accepted as species, and as I have not met with intermediate links, I retain them as distinct until all these *Drymoipi* can (as they urgently require) be carefully reviewed.

Mr. Davison says: "The Fuscous Wren-warbler breeds chiefly on the slopes of the Nilghiris about the Badaga cultivation. The nest is entirely composed of fine grass, and is generally placed about 2 or 3 feet from the ground, either in a clump of long grass or attached to the branch of a small bush. It is often suspended, domed, and with the opening near the top. The eggs, generally three, are blue, spotted and lined with deep red brown."

From Kotagherry Miss Cockburn tells us that "the Common Wren-warbler has no song, but is loud and frequent in its repetition of a few notes during the breeding season. Its nest, which is globular, is built in the same shape as that of *P. socialis,* with the entrance at one end, on some low bush, but it only uses *one* material, namely, fine long grass, and does not add any soft lining. The colour of its eggs, however, are totally different, of a light bluish-green, and having a number of spots and streaks like dark threads carried round and through the spots, which are mostly at the thick end. The breeding season lasts from April to July."

The eggs of this species do not differ materially in size, shape, or markings from those of our North-west bird, which are very fully described below. I have only seen a few specimens, and these did appear slightly paler than the general run of our birds, but till one compares twenty or thirty of each it is impossible to say whether or no the eggs of the two races are at all separable.

543 *bis.—Drymoipus terricolor, Hume.*

This is the pale grey bird of North-West India, never, even when freshly moulted, nearly so rufous as the Nilghiri and other Southern Indian birds, and at the breeding season entirely pale earthy brown or grey.

The Earth-brown Wren-warbler breeds throughout the dryer portions of Oudh, the western portions of the North-West Provinces, and parts of the Central Provinces and Rajpootana. In parts of Central and throughout Southern India it is replaced by the Fuscous Wren-warbler, and towards Bombay by Sykes's bird.

The breeding season commences with the first fall of rain, and lasts through July and August to quite the middle of September.

The birds construct a very elegant nest, always closely and compactly woven, of very fine blades, or strips of blades, of grass, in no nests exceeding one-twentieth of an inch in width, and in many of not above half this breadth. The grass is always used when fresh and green, so as to be easily woven in and out. Both parents work at the nest, clinging at first to neighbouring stems of grass or twigs, and later to the nest itself, while they push the ends of the grass backwards and forwards in and out; in fact, they work very much like the *Baya* (*P. baya*), and the nest, though much smaller, is in texture very like that of this latter species, the great difference being that the Baya, with us, more often uses *stems*, and the *Drymoipus* strips of *blades* of grass. The nest varies in shape and in size, according to its situation: a very favourite locality is in amongst clumps of the *sarpatta*, or Serpent grass, in which case the bird builds a long and purse-like nest, attached above and all round to the surrounding grass stems, with a small entrance near the top; such nests are often 8 or 9 inches in length, and 3 inches or even more in external diameter, and with an internal cavity measuring an 1½ inch in diameter, and having a depth of nearly 4 inches below the lower margin of the entrance hole. At other times they are hung between bare twigs, often of some thorny bush, or are even placed in low herbaceous plants; in these cases they are usually nearly globular, with the entrance hole near the top; they are then probably 3½ inches in external diameter in every direction. In other cases they are hung to or between two or more leaves to which the birds attach the nest, much as a Tailor-bird or *Prinia* would do, using, however, fine grass instead of cobwebs or cotton wool for ligaments. I have never found more than five eggs in any nest, and four is certainly the normal number.

Mr. R. M. Adam remarks: "I have had a nest brought me in Oudh on the 17th April containing four eggs. About Agra and Muttra, where as you know the birds are *very* common, I have always obtained the greatest number of eggs during August; four is the regular number; in one taken on the 16th August I found five eggs."

Mr. W. Blewitt writes: "During July, August, and the early part of September I found multitudes of nests of this species in the neighbourhood of Hansie, almost exclusively in the Dhasapoor, Dhana, and Secundapoor *Beerhs* or jungle preserves.

"The nests, of which numerous specimens were sent to you, were of the usual type, and were nearly all found in Bēr (*Z. jujube*) and Hinse (*Caparis aphylla*) bushes, at heights of from 3 to 4 feet from the ground. I did not meet with more than four eggs in any one nest."

The eggs are a moderately long, and generally a pretty perfect, oval, often pointed towards one end, sometimes globular, seldom, if ever, much elongated. The shell is fine and glossy, and comparatively thick and strong. The ground colour is normally a beautiful pale greenish-blue, most richly marked with various shades of deep chocolate and reddish brown. Nothing can exceed the beauty or variety of the markings, which are a combination of bold blotches, clouds, and spots, with delicate, intricately interwoven lines, recalling somewhat, but more elaborate and, I think, finer than, those of our early favorite—the Yellow Ammer. The markings are invariably most conspicuous at the large end, where there is very commonly a conspicuous confluent cap, and the delicate lines are almost without exception confined to the broader half of the egg.

Very commonly the smaller end of the egg is entirely spotless, and I have a beautiful specimen now before me in which the only markings consist of a ring of delicate lines round the large end. Some idea of the delicacy and intricacy of these lines may be formed when I mention that this zone is barely one-tenth of an inch broad, and yet in a good light between twenty and thirty interlaced lines making up this zone may be counted.

The intricacy of the pattern is in some cases almost incredible, and, what with the remarkable character of the patterns and the rich and varying shades of their colours, these little eggs are, I think, amongst the most beautiful known.

Occasionally the ground colour of the eggs, instead of being a bright greenish-blue, is a pale, rather dull, olive green, and still more rarely it is a clear pinkish-white; these latter eggs are so rare that I have only seen six in about as many hundreds.

In size the eggs vary from 0·53 to 0·7 in length, and from 0·42 to 0·5 in breadth; but the average of one hundred and twenty eggs measured was 0·61 by 0·45.

544.—*Drymoipus longicaudus, Tickell.*

There is some doubt as to the nidification of this Long-tailed Wren-warbler. Long ago I took the nests of what I then considered to be this species, and I have had similar ones sent me by others as pertaining to it; but I have recently had reason to doubt whether either I myself at that time or my correspondents correctly identified this bird, which in its more rufous tone of coloration very closely approaches the true *inornatus*, and I am, therefore, by no means certain now whether the nests and eggs that I have do veritably belong to the present species. If they do they are quite undistinguishable from those of our *D. terricolor* (*q. v.*) already fully described.

Dr. Jerdon on the other hand says that he does not doubt that a nest found by him in a low bush on the edge of a water-course among some paddy-fields in Malabar, near Trichoor, belonged to this species. "The nest," he says, "was deep, cup-shaped, one side slightly raised where it was fixed to the bush, made of grass, well woven, without any lining, and contained four pale blue eggs without any marks." Personally I suspect these eggs to have belonged to *P. Hodgsoni*.

544 *bis.—Drymoipus rufescens, Hume.*

I venture to hope that my remarks on this subject (STRAY FEATHERS, Vol. I, p. 437, and Vol. II, p. 453) will have sufficed to convince all ornithologists that this species is quite distinct from the very much smaller species, *D. Jerdoni,* with which at one time some of my friends seemed disposed to unite it, and I need, therefore, say no more on this head now.

I have never taken the eggs of this species myself, but Mr. F. R. Blewitt has favoured me with numerous nests and a few eggs which he informs me pertain to the Great Rufous Wren-warbler. The nests are somewhat shallow flimsy watch-pockets, loosely put together of grass and intermingled externally with a good deal of wool. Internally very fine grass is used to line the cavity; externally the grass is somewhat coarse. The nests are about 3½ inches in diameter and from 5 to 6 inches deep on one side and about 2 inches on the other. The egg cavity is about 2 inches in diameter and about 1½ inch deep measured from the lower side of the nest.

The eggs, I regret to say, were somehow lost, and I have no record of them. Captain Cock, however, tells me that this species is "common in the jungles around Seetapore. Nest is largish, dome-shaped, and placed low down in a thorny bush. The bird lays in August five eggs, the *fac-simile* of the eggs of *Pratincola ferrea,* perhaps of a more elongated type than the eggs of that bird."

545.—*Drymoipus sylvaticus, Jerd.*

Dr. Jerdon says: "I found the nest in low jungle near Nellore, made chiefly of grass, with a few roots and fibres, globular, large, with a hole at one side near the top, and the eggs white, spotted very thickly with rusty red especially at the thick end."

No one else seems to have ever met with the nest, and, *if* Jerdon has correctly described it, I have never yet seen a specimen of the bird even.

545 *bis.—Drymoipus insignis, Hume.*

I described the great Wren-warbler in STRAY FEATHERS, Vol. I, p. 10, and since then I have received numerous specimens true to the type. The bird is characterized by its large size, black bill, and the pure white under surface of the tail without any anti-penultimate band. I have never myself obtained the nest, but Mr. F. R. Blewitt's people recently found one in the Seoni District, Central Provinces, on the 29th July.

It was a very massive, deeply cup-shaped, almost globular, nest, composed entirely of grass, coarser blades being used externally and finer stems internally. The cavity 2 inches in depth, and about 1·5 in diameter. The walls about 1·5 in thickness, on the bottom about an inch in thickness, so that the exterior diameter is about 4·5, and the height about 3 inches. It was placed apparently in a thick bush at no great height from the ground. It contained four fresh eggs.

About the eggs I fear that there has been some mistake; those that I understood to belong to this nest are very round ovals, the shell fine and glossy, and the ground colour pinky white. Towards the large end are numerous spots, blotches, and twisted streaks, and lines of a deep, brownish, blood-red, many of which are more or less surrounded with a reddish haze or nimbus. Besides these primary markings a few dusky purple spots and clouds appear as if below the surface. The markings are almost entirely confined to the large end, and the larger and bolder streaks and scratches, as well as the dusky sub-surface looking spots, appear absolutely restricted to that part of the egg.

These eggs vary from 0·65 to 0·7 in length, and from 0·57 to 0·6 in breadth but there seems a doubt whether these were the eggs that really belonged to the nest.

It is very possible that the following note by Colonel Tickell may refer to this species, but no reliance can be placed on this:—

"Nest very neat, compact, deep, globular; 3 inches in diameter; coarse grasses outside, fine grass within; the edges clearly defined; attached to reeds, rushes, &c.; eggs three, blunt; size 0·75 by 0·56; fleshy white, with patches and scratches as of dried blood; darker spots showing through shell."

546.—*Drymoipus neglectus, Jerd.*

Mr. F. R. Blewitt obtained a nest containing three eggs of the Allied Wren-warbler, at Jhansie, on the 21st August.

He sent me eggs, nest, and both parents.

The nest was a deep cup, almost globular, rather neatly woven with grass and lined with finer grass. It had been found in a bush about 4 feet from the ground.

The three eggs are rather broad and very perfect ovals, moderately glossy, and reminding one in their style of coloration and character and distribution of markings of those of *Pratincola caprata.* I cannot question the authenticity of these eggs (which appear to be *very* like those of *D. rufescens* as described by Captain Cock), but still they are by no means what I should have expected them to be. The ground colour is a very pale greenish-white, and they have a conspicuous somewhat pale rufous brown mottled zone at the large end, the space within the zone being very thickly, and that outside the zone thinly, speckled with dots and spots of the same colour. As far as I can judge from figures and descriptions (I cannot remember having seen the eggs myself), some varieties of the eggs of the Grasshopper-warbler more nearly resemble these than do those of any other British bird. In shape too they are very similar, but ours are perhaps somewhat smaller.

In length they vary from 0·68 to 0·73, and in breadth from 0·54 to 0·55.

Subsequently Mr. Blewitt appears to have taken many eggs of this species in the Raipoor District, and he has sent me the following notes, together with numerous eggs. He says:—

"The Allied Wren-warbber breeds in the Raipoor District from about the middle of June to the middle of August. Low thorn bushes on rocky ground are chiefly selected for the nest, and both parent birds assist in building it and in hatching and rearing the young. A new nest is made each year, and four is the maximum number of eggs.

"On the 1st July this year I found a nest of this species in the centre of a low thorny bush, growing in rocky ground, about 2 miles north of the village of Doongurgurh in the Raipoor District.

"The nest was about 4 feet from the ground, firmly attached to and supported by the branches. It was of a deep cup shape, 3·6 in diameter and 4·9 in height, composed of coarser and finer grasses firmly interwoven, and contained four fresh eggs. In the same locality we secured a second similarly situated nest, about 2½ feet from the ground, and it contained a single fresh egg. It was rather more neatly and massively made than the former. It was about 4 inches in diameter and 5 inches in height, and the egg cavity was nearly 3 inches deep. The lining is of fine grass stalks well interwoven. The exterior is composed of coarse grass mixed with a little greyish-white fibre.

"Subsequently several other similar and similarly situated nests were found."

The eggs vary very much in appearance, though, when a considerable series is examined, it is found that they all belong to one type.

Looked at from a little distance they are all characterized by an apparently uniformly coloured ground with a well marked, clouded, somewhat brownish-red, or brownish-pink zone round the large end, the space enclosed by the zone being coloured like it, but much paler in tint.

Looked closely into, not only does the ground colour vary very much, being in some greenish, in some very pale fawn colour, in some reddish-white; but while in some it is really uniform, in others it is excessively minutely freckled or speckled with reddish or brownish pink, so finely so that, unless closely looked into, this is not perceptible in most eggs, but only alters the general tint of the ground colour.

As a rule the eggs have a fine gloss, and are moderately elongated, very regular, ovals, but somewhat broader and slightly pyriform examples are met with.

In size they vary a good deal, in length from 0·63 to 0·78, and in breadth from 0·49 to 0·55, but the average of twenty-two specimens is 0·70 by 0·51.

547.—*Suya crinigera, Hodgs.*

The Brown Hill-warbler breeds throughout the Himalayas, at elevations of from 2,000 to 6,000 feet, at any rate from Sikhim, where it is comparatively rare, to the borders of Afghanistan.

The breeding season lasts from the beginning of May until the middle of July, but the majority of the birds lay during May.

A nest which I took at Dilloo, in the Kangra Valley, on the 26th May, was situated near the base of a low bush on the side of a steep hill; it was placed in the fork of several twigs near the centre of the bush, about 2 feet from the ground. It was an excessively flimsy deep cup, about 3 inches in diameter and 2½ inches in depth internally. It was composed of downy seeds of grass held together externally by a few very fine blades of grass, and irregularly and loosely lined with excessively fine grass stems.

Many other nests subsequently obtained were similar in their materials, the great body of the nest consisting of grass down, slightly felted together and wound round with slender blades of grass. The nest, however, is by no means always cup-shaped; it is often covered in above, an aperture being left on one side near the top.

A nest which I found near Kotegurh is composed of fine grass *very* loosely and slightly put together, all the interspaces being carefully filled in with grass down firmly felted together. The nest is nearly the shape of an egg, the entrance being on one side, and extending from about the middle to close to the top. The exterior dimensions of the nest are about 5½ inches for the major axis and 3 inches for the minor. The entrance aperture is circular and about 2 inches in diameter. The thickness of the nest is a little over three-eighths of an inch; but the lower portion, which is lined with *very* fine grass stems, is somewhat thicker. The nest was in a thorny bush, partly suspended from just above the entrance aperture and partly resting against, though not attached to, some neighbouring twigs. It contained seven eggs, and was taken at Kirlee (Kotegurh) on the 30th May. Of course, the position of the nest was that of an egg standing on end and not lying on its side.

They lay from five to seven eggs, and have, *I think*, two broods.

Dr. Jerdon states that "it makes a large, loosely constructed nest of fine grass, the opening near the top a little at one side, and lays three or four eggs of a fleshy white, with numerous small rusty red spots tending to form a ring at the large end."

From Almorah Mr. Brooks writes that this species was "common on hill sides where low bushes were numerous. One nest found was suspended in a low bush, and was a very neat purse-shaped one, with an opening near the top and rather on one side. The nest was composed of fine soft grass of a kind which had dried green, and was intermixed with the down of plants and lined with finer grass. The eggs were four in number; the ground colour white, speckled sparingly with light red, but having also a broad zone or ring of deeper reddish-brown very near the large end—on the top of the larger end in fact.

"Laying in Kumaon in May."

From Mussoorie Captain Hutton remarks: "This little bird appears on the hills, at about 5,000 feet, in May. A nest taken much lower down in June was composed of grasses neatly interwoven in the shape of an ovate ball, the smaller end uppermost and forming the mouth or entrance; it was lined first with cottony seed down, and then with fine grass stalks; it was suspended among high grass, and contained five beautiful little eggs of a carneous white colour, thickly freckled with deep rufous, and with a darkish confluent ring of the same at the larger end. I have seen this species as high as 7,000 feet in October. It delights to sit on the summit of tall grass, or even of an Oak, from whence it pours forth a loud and long continued grating note like the filing of a saw."

The eggs of this species are moderately elongated and very perfect ovals. They have a white or pinkish-white ground, and typically have a very perfect brick-red zone round the large end, and minute specks of the same colour more or less scattered over the whole surface of the egg. The shells are very fragile and delicate, and have a faint gloss. In some eggs the zone is replaced by a confluent cap, paler however on the crown of the egg, and the whole of the rest of the egg is thickly speckled and mottled with red, which, though typically bright and brick-like, is not unfrequently dull and, more or less, brownish.

The eggs vary in length from 0·6 to 0·75, and in breadth from 0·47 to 0·53; but the average of thirty-four eggs is 0·68 by 0·51 nearly.

548.—*Suya fuliginosa*, *Hodgs.*

The Dusky Hill-warbler breeds in Kumaon, Nepal and Sikhim, *I believe*, at elevations of from 3,000 to 5,000 feet. I know little of its nidification. I have never myself taken a nest, and only know of two that have been obtained—one by Mr. Brooks near Almorah on the 19th May, and one by Mr. T. Masson below Darjeeling in June.

Mr. Blyth remarks: "Probably identical with *S. atrogularis*. Mr. Hodgson, however, figures the egg of *S. fuliginosa* as rufous white, with minute rufous specks that form a zone at the large end; and that of *S. atrogularis* as green, with rufous specks more numerous at the large end."

The bird is not in the least like *atrogularis*, but it closely approaches *crinigera*, and to the best of my belief Mr. Hodgson has correctly represented the eggs of both the species mentioned.

The first egg I received of this species I owed to Mr. Brooks. I examined the parent bird, and believe it to have belonged unquestionably to that form of *Suya* which is known as *fuliginosa*; whether there is any sufficient constant difference between this form and the typical *crinigera* to entitle it to specific distinction has, I know, been doubted, but I myself, looking to the eggs as well as to the bird, am inclined to believe in their distinctness. Other eggs subsequently obtained from Mr. Masson agreed entirely with Mr. Brooks's specimen.

The eggs are broad, very perfect, ovals, closely resembling (though slightly smaller) in character and colour of markings the eggs already described as those of *Drymoipus neglectus*; but the ground colour, instead of being, as in this latter, pale *greenish*-white, is pale *pinkish*-white. In some respects they remind us of one type of *Orthotomus'* eggs.

To the eggs of *Parus cinereus* they bear externally a strong resemblance, but they are more glossy, much less pointed in shape, and the markings are far finer and more speckly.

The six eggs I possess vary from 0·66 to 0·72 in length, and from 0·51 to 0·53 in breadth.

549.—*Suya atrogularis*, *Moore.*

The Black-throated Hill-warbler breeds in Kumaon and the Himalayas eastwards from thence, at elevations of 4,000 to 6,000 feet.

The breeding season lasts from April to July, but the birds mostly lay in May and June. Open grassy hill sides dotted about with scrub, thin forests, or gardens are the localities it affects. The nest is placed at times in some low bush surrounded with and grown through by grass, more commonly in clumps of grass, and never at any great height from the ground. It is more or less egg-shaped, and placed with the longer diameter vertical, the entrance being on one side above the middle. It is composed exteriorly, sometimes of fine grass-roots, sometimes of the finest possible grass loosely but sufficiently firmly interwoven, a little moss being often incorporated in the upper portion, and internally always, I think, exclusively of fine grass.

Four is perhaps the usual number of the eggs, but I have found five.

Mr. Gammie, writing from Sikhim, says: "I have found four nests of this species this year in the Chinchona reserves, at elevations of from 4,500 to 5,500 feet, during the months of May and June. The nests were all in open grassy country, in grass by the sides of low banks, and not above a foot off the ground. They are globular, with a lateral entrance, composed of grass, and with a little moss about the dome. One I measured was 5·5 high, and 4·5 in diameter externally; internally the nest was 2·4 in diameter, and the cavity had a total height of 3·9, of which 2 inches was below the lower edge of the entrance. According to my experience four is the regular complement of eggs. I have repeatedly (three times this year) shot the female off the nest, and beyond question Jerdon is wrong about this bird's laying Indian red eggs."

According to Mr. Hodgson's notes, this species breeds in groves and open forest in Sikhim and the central region of Nepal from April to June, building a large globular nest in clumps of grass, of dry grass, roots, and moss, lined with fine grass and moss-roots. The entrance, which is circular, is at one side; the nest is egg-shaped, the longer diameter being perpendicular, and is placed at a height of about 6 inches from the ground. A nest taken on the 30th May measured 6·12 in height and 3·5 in diameter externally, and the circular aperture, which was just above the middle, was 1·75 in diameter. It contained four eggs, which are represented as ovals, a good deal pointed towards one end, measuring 0·69 by 0·55. The ground colour is a pale green, and they are speckled and spotted with bright red, the markings being most numerous towards the large end, where they have a tendency to form a zone or cap.

Dr. Jerdon says that "it makes its nest of fine grass and withered stalks, large, very loosely put together, globular, with a hole near the top, and lays three or four eggs of an entirely dull Indian red colour." This undoubtedly is a mistake; the eggs he refers to are, I think, those of 552—*N. flavolivacea.* He gave them to me, but was not certain of the species they belonged to.

The eggs of our present species are of precisely the same shape as those of the preceding species, and of the same character; but they are a shade smaller, and the ground colour, instead of being pink or pinky white, is a pale, delicate, sometimes greyish, green. There is the same zone, though perhaps less well defined, round the large end, and this is a purple instead of brick-red, and specks of the same colour are sprinkled pretty thickly over the whole surface. The eggs, too, are perhaps slightly more glossy and the markings more minute.

In length they vary from 0·63 to 0·79, and in breadth from 0·48 to 0·52; but the average of twenty eggs is 0·69 by 0·5.

550.—*Burnesia gracilis, Rüpp.*

I have never happened to meet with the nest of the Streaked Wren-warbler, and all the information I possess in regard to its nidification I owe to Mr. A. Anderson.

Mr. Anderson remarks: "Although this species was far from uncommon, I found it very local and confined entirely to the Tamarisk-covered islands and 'churs' along the Ganges.

"The first nest was taken on the 13th March last, and contained three well incubated eggs; of these I saved only one specimen, which is now in the collection of Mr. Brooks. The second was found on the following day, and contained two callow young and one perfectly fresh egg.

"The nest is domed over, having an entrance at the side; and the cavity is comfortably lined, or rather felted, with the down of the Madar plant. It is fixed, somewhat after the fashion of that of the Reed-warbler, in the centre of a dense clump of Sarpat grass, about 2 feet above the ground. On the whole the structure is rather large for so small a bird, and measures 6 inches in height by 4 inches in breadth.

"But while the *nest* corresponds exactly with Canon Tristram's description* of those taken by him in Palestine, there are differences, oologically speaking, which induce me to hope that our Indian bird may yet be restored to specific distinction. In the first place, my single eggs from each nest have a *green* ground colour, and are covered all over with reddish-brown spots. Now, Mr. Tristram describes his Palestine specimens as 'richly coloured *pink* eggs, with a zone of darker red near the larger end, and in shape and colour resembling some of the *Prinia* group.' Is it possible for the same birds to lay such widely different eggs? If I had taken only one specimen, it might have been looked upon as mere variety. Again, our Indian bird lays three eggs, and I have never seen the parent birds feeding more than this number of young ones, occasionally only two. Mr. Tristram, *per contra*, mentions having met with as many as five and six. The egg is certainly the prettiest, and one of the smallest, I have ever seen; indeed, I found it too small to risk measurement."

He adds: "Since writing the above, which appeared in the Ibis, I have discovered that this species breeds in September and October as well as in February and March, so some of them probably have two broods in the year. I took a nest on the 9th October at Futtegurh, which contained two callow young and one *(fresh)* egg, which I send you, and which is exactly similar to all the others I have taken from time to time."

The egg sent me by Mr. Anderson is a very broad oval in shape, a good deal compressed however and pointed towards the small end. The shell is very fine and has a decided gloss. In colouring the egg is exactly like those of some of the Black-birds—a pale green ground, profusely freckled and streaked with a bright, only slightly brownish, red; the markings are densest round the large end, where they form a broad, nearly confluent, well marked, but imperfect and irregular, zone. It measures 0·55 by 0·41.

550 *bis.—Scotocerca inquieta, Rüpp.*

Melizophilus striatus, apud Brooks, turns out to be identical with *inquieta*, Rüpp. Mr. Blanford says it cannot be a *Melizophilus;* but *à fortiori* it cannot be retained as a *Drymœca,* and I therefore adopt his suggestion and accept Sundevall's generic name.

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* Tristram on the Ornithology of Palestine, P. Z. S., 1864, p. 437; Ibis, 1865, pp. 82, 83.

The Streaked Scrub-warbler is a permanent resident of the bare stony hills which, under many names and broken into multitudinous ranges, run down from the Khyber Pass to the sea, dividing the Punjab and Sindh from Afghanistan and Khelat.

All I yet know of its nidification is contained in the following note most kindly furnished me by Captain Cock:—

"I first discovered this bird breeding in February in the Khuttuck Hills. It is common throughout the range of stony hills between Peshawur and Attock, and I have seen it on the hills between Jhelum and Pindi, but never took their nest in this latter locality. At Nowshera it is very common, and towards the end of February a collector could take four or five nests in a day. It builds in a low thorny shrub, about 1½ feet from the ground, makes a largish globular nest of thin dry grass stems, with an opening in the side, thickly lined with seed down, and containing four or five eggs. Their nesting operations are over by the end of March."

The eggs are moderately broad and regular ovals, usually somewhat compressed towards one end, but occasionally exhibiting no trace of this. The shell is very fine and delicate, but, as a rule, entirely devoid of gloss. The ground colour varies from pure to pinky white. The markings are always minute, but in some they are comparatively much bolder and larger than in others, and they vary in colour from reddish-pink to a comparatively bright red. In many eggs the markings are much most dense towards the large end, where they form, or exhibit a strong tendency to form, an irregular, more or less confluent, zone, and wherever the markings are dense, there a certain number of tiny pale purple or lilac spots or clouds will be found intermingled with, and underlying, the red markings. Some eggs show none of these spots and exhibit no tendency to form a zone, being pretty uniformly speckled and spotted all over. Some are not very unlike eggs of the Grasshopper and Dartford Warblers; others again are almost counterparts of the eggs of *Franklinia Buchanani.*

In length the eggs vary from 0·6 to 0·68, and in breadth from 0·46 to 0·51.

551—*Franklinia Buchanani, Blyth.*

The Rufous-fronted Wren-warbler breeds throughout Central India, the Central Provinces, the North-Western Provinces, the Punjab, and Rajpootana. It affects chiefly the drier and warmer tracts, and, though said to have been obtained in the Nepal Terai, has never been met with by *me,* either there or in any very moist, swampy, locality. The breeding season extends from the end of May until the beginning of September.

The nests, according to my experience, are always placed at heights of from a foot to 4 feet from the ground in low scrub jungle or bushes. They vary greatly in size and shape, according to position. Some are oblate spheroids with the aperture near the top, some are purse-like and suspended, and some are regular cups. One of the former description measured externally 5 inches in diameter one way by 3¼ inches the other. One of the suspended nests was 7 inches long by 3 inches wide, and one of the cup-shaped nests was nearly 4 inches in diameter and stood perhaps at most 2½ inches high. The egg cavity in the different nests varies from 1¾ inch to 2¼ inches in diameter, and from less than 2 to fully 3 inches in depth. Externally the nest is very loosely and, generally, raggedly constructed of very fine grass stems and tow-like vegetable fibre used in different proportions in different nests, those in which grass are chiefly used being most ragged and straggling, and those in which most vegetable fibre has been made use of being neatest and most compact. In all the nests that I have seen the egg cavity has been lined with something very soft, differing thus from the *Prinias*, *Drymoipi*, and *Suyas*. In many of the nests the lining is composed of small felt-like pieces of some dull salmon coloured fungus with which the whole interior is closely plastered; in others there is a dense lining of soft silky vegetable down; and in others the down and fungus are mingled. They lay from four to five eggs, never more than this latter number, according to my experience.

"At the end of June 1867," writes Mr. Brooks, "I took two nests of this bird at Chunar in low Bêr bushes about 2 feet from the ground. They were little spheres of fine grass with a hole at the side. One contained four eggs; these were of a greyish-white ground, or nearly pure white, finely speckled over with reddish-brown, some of the eggs exhibiting a tendency to form a zone round the large end, and others with a complete zone."

"At Sambhur," Mr. Adam says, "this Wren-warbler is always found wherever there are low bushes. It breeds just before the rains, but I have not recorded the date. I had a nest with the bird and five eggs sent to me. The eggs are pale bluish-white with reddish-brown spots and freckles all over them."

"During July, August, and the early part of September," remarks Mr. W. Blewitt, "I found a great number of the nests and eggs of this bird in the jungle preserves of Hansie and its neighbourhood.

"The nests, of which I have already sent you several, were mostly in Bêr *(Zizyphus jujube)* and Hinse *(Capparis aphylla)* bushes, at heights of from 3 to 4 feet from the ground. Five was the largest number of eggs that I found in any one nest."

The eggs vary somewhat in size and shape; a moderately broad oval, slightly compressed towards the larger end, being, however, the commonest type. Examining a large series, it appears that variations from this type are more commonly of an elongated than a spherical form. The eggs are of the same character as those of *I. caligata* and *Cisticola schœnicola (vide supra)*, but yet differ somewhat from either of these. The eggs are many of them fairly glossy, the shells very delicate and fragile, the ground colour white, usually slightly greyish, but in some specimens faintly tinged with very pale green or pink. Typically they are very thickly and very finely speckled all over with somewhat dingy red or purplish-red. In three out of four eggs the markings are densest and largest towards the large end; and, to judge from the large series before me, at least one in four exhibits a more or less well defined mottled zone or cap at this end, formed by the partial confluence of multitudinous specks.

In some specimens the markings are pale inky purple, and in some slightly purplish-brown, but these are abnormal varieties. In one or two eggs fairly sized spots and blotches are intermingled with the minute specklings, but this also is rare. Of course in different specimens the density of the speckling varies greatly; in some eggs not a fifth of the surface is covered with the markings, while in some it appears as if there were more of these than of the ground colour.

In length the eggs vary from 0·55 to 0·66, and in breadth from 0·43 to 0·52; but the average of eighty-seven eggs is 0·62 by 0·48.

552.—*Neornis flavolivacea*, *Hodgs.*

Mr. Hodgson's notes and figures show clearly, in my opinion, that his plate No. 900 represents the nest and eggs of this species, and not of *assimilis*, as supposed by Gray.

According to Mr. Hodgson, the Aberrant Tree-warbler breeds from May to July in the central region of Nepal. They build a tolerably compact and rather shallow cup-shaped nest of grass and dry Bamboo leaves, mingled with grass-roots and vegetable fibre and lined with feathers.

A nest taken on the 29th May measured externally 3·5 in diameter and 2 inches in height, and internally 2 inches in diameter by 1·37 in depth. It contained four eggs, which are figured as deep dull purple-red. Dr. Jerdon gave me two eggs, as I now feel certain, belonging to this species; there is no mistaking them, as they are the most wonderful coloured eggs I ever saw; but as he was not certain to what species they belonged, I unfortunately threw them away. Mr. Hodgson figures the egg as a moderately broad oval, a good deal pointed towards one end, slightly glossy, and measuring 0·65 by 0·47.

We have a second independent account of the eggs of this species, which quite confirms Mr. Hodgson's.

Mr. W. Theobald makes the following remarks on the breeding of this bird in Darjeeling:—

"Lays in the second week of July. Eggs, three in number, blunt, ovato, pyriform. Size, 0·69 by 0·55. Colour, deep dull claret red, with a darker band at broad end. Nest, a deep cup, outside of Bamboo leaves, inside fine vegetable fibres, lined with feathers."

552 *bis.*—*Neornis assimilis*, *Blyth.*

Mr. Gammie sent me a bird unmistakeably of this species—Blyth's Aberrant Tree-warbler—together with the lining of a nest and three eggs.

He says: "The nest, eggs, and bird were brought to me on the 18th May by a native, who said the nest was placed in a shrub, about 6 feet from the ground, in a place filled with scrub near Rishap, at about 3,500 feet above the sea. I noted at the time the man's account, but as I did not take the nest myself I kept no account of it. All I know about it is written on the ticket attached to the nest sent to you. The bird was snared on the nest. Though I did not take it myself, I have little doubt that it is quite correct."

The lining of the nest is a little, soft, shallow saucer 2½ inches in diameter, composed of the finest and softest brown roots.

The eggs are somewhat of the same type as those of *N. flavolivacea*, but in colour more resembling those of the ten-tail-feathered *Prinias*. They are very short broad ovals, pulled out and pointed towards one end, *approximating* to the peg-top type. They are very glossy and of an uniform Indian red; duller coloured rather than the *Prinias*; not so deep or purple as those of *N. flavolivacea*.

They measured 0·65 by 0·52.

553.—*Iduna caligata*, *Licht.*

I have never myself obtained the nest and eggs of Sykes's Warbler, *P. rama*, *apud Jerd.* On the 1st April, at Etawah, my friend Mr. Brooks shot a male of this species off a nest; and I saw the bird, nest, and eggs within an hour, and visited the spot later. The nest was placed in a low thorny bush, about a foot from the ground, on the side of a sloping bank in one of the large dry ravines that in the Etawah District fringe the River Jumna for a breadth of from a mile to 4 miles. The nest was nearly egg-shaped, with a circular entrance near the top. It was loosely woven with coarse and fine grass, and a little of the fibre of the "Sun" *(Crotalaria juncea)*, and very neatly felted on the whole interior surface of the lower two-thirds with a compact coating of the down of flowering grasses and little bits of spider's web. It was about 5 inches in its longest and 3½ inches in its shortest diameter. It contained three fresh eggs, which were white, very thickly speckled with brownish-pink, in places confluent and having a decided tendency to form a zone near the large end. Three or four days later we shot the female at the same spot.

A similar nest and two eggs, taken in Jhansi on the 12th August, were sent me with one of the parent birds by Mr. F. R. Blewitt, and again another nest with four eggs was sent me from Hoshungabad.

There ought to be no doubt about these nests and eggs, the more so that I have several specimens of the bird from various parts of the North-Western Provinces and Central Provinces killed in August and September, but somehow I do not feel quite certain that we have not made some mistake. Beyond doubt the great mass of this species migrate and breed further north. I have never obtained specimens in June or July, and if these nests really, as the evidence seems to show, belonged to the birds that were shot on or near them, these latter must have bred in India before or after their migration, as well as in Northern Asia.

Though one may make minute differences, I do not think either of the three nests or sets of eggs could be certainly separated from those of *F. Buchanani*, which might well have eggs about both in April and August, and I am not prepared to say that in each of these three cases, *caligata*, which frequents precisely the same kind of bushes that *Buchanani* breeds in, may not accidentally have been shot in the immediate proximity to a nest of the latter, the owner of which had crept noiselessly away, as these birds so often do.

Dr. Jerdon says: "I have obtained the nest and eggs of this species on one occasion only at Jáulnah in the Dekhan; the nest was cup-shaped, made of roots and grass, and contained four pure white eggs."

I do not attach undue weight to this, for Dr. Jerdon did not care about eggs, and was rather careless about them; but still his statement has to be noted, and the whole matter requires careful investigation.

The eggs that I possess closely resemble some types of *Franklinia Buchanani*, but they are typically, perhaps slightly, more elongated and pointed ovals, and are never (as far as my specimens go) as densely speckled as are most of those of this latter species. Moreover, they show less tendency to exhibit a cap or zone at the large end, and I have none as (comparatively) boldly and richly marked as some types of *F. Buchanani* are. The ground colour is white, and they are moderately thickly dotted all over with excessively minute purplish-red or purple specks, which are somewhat more dense towards the large end. As in the eggs of *F. Buchanani* some are fairly glossy; some are glossless.

In length they vary from 0·6 to 0·67, and in breadth from 0·45 to 0·5; but the average of seven eggs, one from Etawah, two from Jhansi, and four from Hoshungabad, is 0·63 by 0·47.

560 *bis.*—*Phylloscopus Tytleri, Brooks.*

Tytler's Tree-warbler, as yet a rare bird in collections, and which appears only to straggle down to the plains of Upper India during the cold season, was found by Captain Cock breeding at Sonamerg (9,400 feet elevation) in the Sindh Valley, Cashmere, in June.

Mr. Brooks, who discriminated the bird, said of it and its nidification: "In plumage resembling *P. viridanus,* but of a richer and deeper olive; it is entirely without the 'whitish wing bar,' which is always present in *viridanus,* unless in very abraded plumage. The wing is shorter, so is the tail; but the great difference is in the bill, which is much longer, darker, and of a more pointed and slender form in *P. Tytleri.* The song and notes are utterly different, so are the localities frequented. *P. viridanus* is an inhabitant of Brushwood ravines, at 9,000 and 10,000 feet elevations; while *P. Tytleri* is exclusively a Pine forest *Phylloscopus.* In the places frequented by *viridanus,* it must build on the ground, or very near it; but our new species builds, 40 feet up a Pine tree, a compact half-domed nest on the side of a Fir branch.

"Captain Cock shot one of this species off the nest at Sonamerg with four eggs. The bird he sent to me, and gave me two of the eggs. Regarding the nest he says: 'I took a nest, containing four eggs, about 40 feet up a Pine, on the outer end of a bough, by means of ropes and sticks, and I shot the female bird. I do not know what the bird is. I thought it was *P. viridanus,* but I send it to you. The nest was very deep, solidly built, and cup-shaped. Eggs, plain white.' In conversation with Captain Cock he afterwards told me that he had watched the bird building its nest. It was rather on the side of the branch, and its solid formation reminded him of a Goldfinch's nest. It was composed of grass, fibres, moss, and lichens externally, and thickly lined with hair and feathers. The eggs were pure unspotted white, rather smaller than those of *R. occipitalis.* Two of them measured ·58 by ·48 and ·57 by ·45. They were taken on the 4th June."

Captain Cock himself writes to me: "Of all the birds' nests that I know of, this is one of the most difficult to find. One day in the forest at Sonamerg, Cashmere, I noticed a warbler fly into a high Pine with a feather in its bill. I watched with the glasses and saw that it was constructing a nest, so allowing a reasonable time to elapse (nine days or so) I went and took the nest. It was placed on the outer end of a bough, about 40 feet up a high Pine, and I had to take the nest by means of a spar lashed at right angles to the tree, the outer extremity of which was supported by a rope fastened to the top of the Pine. The nest was a very solid, deep, cup, of grass fibres and lichen externally, and lined with hair and feathers. It contained four white eggs, measuring 0·58 by 0·48.

"I shot the female, which I sent to Mr. Brooks for identification.

"I forgot to add that this nest, the only one I ever found, was taken early in June."

The egg of this species closely resembles that of some of the *Abrornis'*—a moderately broad oval, slightly pointed at the small end, pure white, and almost glossless. The only specimen I have seen measures 0·58 by 0·45.

563.—*Reguloides occipitalis, Jerd.*

The Large-crowned Warbler breeds in Cashmere and the North-West Himalayas generally, during the latter half of May, June, and the first half of July, apparently at any elevation from 4,000 to 8,000 feet.

Mr. Brooks says: "This is perhaps the commonest bird in Cashmere, even more so than *Passer indicus*. It is found at almost all elevations above the valley where good woods occur.

"I only took three nests, as the little bird is very cunning, and, unlike the simple *Reguloides superciliosus*, is very careful indeed how it approaches its nest when an enemy is near.

"The nest is placed in a hole under the roots of a large tree on some steep bank side. I found one in a decayed stump of a large Fir tree, inside the rotten wood. It was placed on a level with the ground, and could not be seen till I had broken away part of the outside of the stump. It was composed of green moss and small dead leaves, a scanty and loosely formed nest, and not domed. It was lined with fine grass and a little wool, and also a very few hairs. There were five eggs.

"Another nest was also placed in a rotten stump, but under the roots.

"A third nest was placed in a hole under the roots of a large living Pine, and in front of the hole grew a small Rose bush quite against the tree trunk. This nest was most carefully concealed, for the hole behind the roots of the Rose bush was most difficult to find.

"The eggs, four or five in number, are of a rather longer form than those of *Reguloides superciliosus* and are pure white without any spots. They average ·65 by ·5."

He added *in epist:* "This is a much slyer bird than *R. superciliosus*. I watched many a one without effect. The nest is a loose structure of moss lined with a little wool, and would not retain its shape after coming out of the hole. It is a most amusing bird, very noisy, with a short poor song, and utters a variety of notes when you are near the nest."

Certainly the nests he brought me are nothing but little pads of moss, 3 to 4 inches in diameter and perhaps an inch in thickness. There is no pretence for a lining, but a certain amount of wool and excessively fine moss-roots are incorporated in the body of the nest. *In situ* they would appear to be sometimes more or less domed.

Captain Cock writes to me: "I have taken numbers of nests of this bird in Cashmere and in and about the hill station of Murree. They commence breeding in May and have finished by July. The nests are placed under roots of trees, in crevices of trees, between large stems, and a favorite locality is, where the road has a stone embankment to support it, between the stones. The nest is globular, made of moss, and the number of eggs is four. I have often caught the old bird on the nest. The nests are easy to find, as the birds are very noisy and demonstrative when any one is near their nests."

Captain C. H. T. Marshall also very kindly gives me the following most interesting note on the nidification of this species in the vicinity of Murree. He says:—

"This little Wren-warbler, as far as my own experience goes, always prefers a pretty high elevation for breeding. Out of the dozen nests found by Captain Cock and myself in the neighbourhood of Murree, none were at an elevation of less than 6,500 feet above the sea, and my shikaree, who was always on the look out for me in the lower ranges, never came across the nest of this species.

"The nest is generally placed in holes at the foot of the large Spruce Firs. It is a difficult nest to find, as the bird selects holes into which the hand will not go, and outside there are no signs of there being any nest within.

"The cock bird spends most of his time at the tops of trees, coming down at intervals. The only chance of success in taking the eggs is to watch carefully any that may be flying low in the bushes, until they disappear cautiously into the holes where they are breeding. I should mention that we have also found some nests in the rough stone walls on the hill road sides.

"The nest is as neatly and carefully built as if it had to be exposed on the branch of a tree. It is globular in shape, made of moss, and lined with feathers. The eggs are pure white. They apparently rear two broods in the year. In the first nest, which we found under the root of an old Spruce Fir on the 17th May, the eggs were quite hard-set, and I may remark that immediately over this nest, about 8 feet up the tree in a crack in the wood, a little *Muscicapula superciliaris* was sitting on five eggs. Later at the end of June we found *fresh* eggs in several nests. The eggs in our collection were all taken between the 17th May and the 10th July."

They do not always, however, select such situations as those referred to in the above accounts. Mr. E. C. Buck, C. S., says: "I found a nest on 11th June in the roof of Major Batchelor's bungalow at Nachar, in the Sutlej Valley; it contained young birds. I was not allowed to disturb the nest, which was composed externally of moss. I noticed a second half-made nest near the other."

The eggs of this species are, as might be expected, somewhat larger than those of *Reguloides superciliosus*, and they are of a different character, being spotless, white, and slightly glossy. In shape the eggs vary from a nearly perfect, moderately elongated, oval to a slightly pyriform shape, broad at the large end, and a good deal compressed and somewhat pointed towards the small end; (*vide* the representation of the eggs of *Ruticilla tithys* in Hewitson's work).

In length they vary from 0·63 to 0·68, and in breadth from 0·48 to 0·53; but the average of fifteen eggs measured is 0·65 by 0·5.

565.—*Reguloides superciliosus, Gmel.*

Mr. Brooks and Captain Cock are the only persons I know of who have taken the eggs and nests of this species. The nest and eggs sent to and described by me in the IBIS as belonging to this bird cannot really have pertained to it.

Mr. Brooks tells us that *superciliosus* "is very abundant in Cashmere, and I believe in all hills immediately below the snows. It would be vain to look for this bird at elevations below 8,000 feet, or at any distance from the snows. It was common even in the Birch woods above the upper line of Pines. I found many nests. It builds a globular nest of coarse grass on a bank side, always on the ground, and never up a tree. The nest is lined with hair in greater or lesser quantities. The eggs, four or five in number, average ·56 by ·44, are pure white, profusely spotted with red, and sometimes have also a few spots of purplish-grey. On the 15th June I found a nest with four young ones on the south side of the Pir-panjal Pass. This bird has no song, only a double chirp in addition to its call-note. The double chirp, which is very loud, is intended for a song, for the male bird incessantly repeats it as he feeds from tree to tree near where the female is sitting upon her nest."

Nests of this species obtained in Cashmere towards the end of May and during June near Goolmerg, and brought me by Mr. Brooks, were certainly by no means worthy of this pretty little warbler. They are very loosely made, more or less straggling cups of somewhat coarse grass, only slightly lined interiorly with fine moss-roots. The egg cavity is very small compared to the size of the nest, some of which look like balls of grass with a small hole in the centre. They average from 4 to 5 inches in external diameter, and from 2 to 3 inches in height. The egg cavity does not exceed 2 inches in diameter, and seems often to be less, and is from an inch to half an inch in depth.

From Cashmere, when in the thick of the nests of this species, Mr. Brooks wrote to me as follows:—

"From Goolmerg, which is at the foot of a snowy range, I went up to the foot of the snows through Pine forests. The Pines ceased near the snow and were replaced by Birch wood on tremendously rocky ground, which bothered me greatly to get over. I had missed *R. superciliosus* after leaving the foot of the hill, where water was plentiful, but here again the bird became abundant. I could not, however, find a nest here, though I watched several pairs. I think in the cooler country they breed later. Flowers which had gone out of bloom below I again met with up here in full flower.

"Blyth says: '*R. superciliosus* has not any song, unless a sort of double call, consisting of two notes, can be called a song.' This the males vigorously uttered all day long, but I did not notice this much; but as soon as the female sharply and rapidly uttered the well-known bell-like call, I knew she was disturbed from her nest, or had left it of her own accord. Whichever of us heard this rushed quickly to the spot, and the female once sighted was kept in view as she flitted from tree to tree, apparently carelessly feeding all the while; soon she came lower down to the bushes below, and now her note quickened and betokened anxiety; generally before half an hour would elapse she would make a dash at a particular spot, and wish to go in but checked herself. This would be repeated two or three times, and now the nest was within the compass of 2 or 3 yards. At last down she went and her note ceased. When all had been quiet for a minute or two, the male meanwhile continuing his double note in the trees above, I cautiously approached the place. Sometimes the nest was very artfully concealed, but other times there it was—the round green ball with the opening at one side. I often saw the female put her head out and then partially draw it in again. Her well defined supercilium was very distinct. I thought I could catch her on the nest once, and went round above her, but out came her head a little further, and she bolted as I brought down my pocket handkerchief on the nest. I shot one or two from the nest, but this I found unnecessary. In every case the female shouted vigorously on leaving the nest or immediately after, and by her very peculiar note fully authenticated the eggs."

Elsewhere Mr. Brooks has remarked: "Goolmerg is one of those mountain downs, or extensive pasture lands, which are numerous on the top of the range of hills immediately below the Pir-Panjal Range, which is the first snowy range. It is a beautiful mountain common, about 3,000 feet above the level of Sirinugger, which latter place has an elevation of 5,235 feet. This common is about 3 miles long and about a couple of miles wide, but of very irregular shape. On all sides the undulating grass land is surrounded by Pine-clad hills, and on one side the Pine slopes are surmounted by snowy mountains. On the side near the snow the supply of water in the woods is ample. The whole hill-side is intersected by small ravines, and each ravine has its stream of pure cold water—water so different from the tepid fluid we drink in the plains. In such places where there were water and old Pines *R. superciliosus* was very abundant: every few yards was the domain of a pair. The males were very noisy, and continually uttered their song. This song is not that described by

Mr. Blyth as being similar to the notes of the English Wood-wren (*P. sibilatrix*) but fainter—it is a loud double chirp or call, hardly worthy of being dignified with the name of song at all. While the female was sitting, the male continued vigorously to utter his double note as he fed from tree to tree. To this note I and my native assistants paid but little attention, but when the female, being off the nest, uttered her well-known "*tiss-yip*," as Mr. Blyth expresses the call of a Willow-wren, we repaired rapidly to the spot and kept her in view. In every instance, before an hour had passed, she went into her nest, first making a few impatient dashes at the place where it was, as much as to say—"There it is, but I don't want you to see me go in."

"The nest of *R. superciliosus* is always, so far as my observation goes, placed on the ground on some sloping bank or ravine side. The situation preferred is the lower slope near the edge of the wood, and at the root of some very small bush or tree: often, however, on quite open ground, where the newly growing herbage was so short that it only partially concealed it. In form it is a true Willow-wren's nest—a rather large globular structure, with the entrance at one side. Regarding the first nest taken, I have noted that it was placed on a sloping bank on the ground, among some low Ferns and other plants, and close to the root of a small broken Fir tree, which, being somewhat inclined over the nest, protected it from being trodden upon. It was composed of coarse dry grass and moss, and lined with finer grass and a few black hairs. The cavity was about 2 inches, and the entrance about 1½ inch in diameter. About 20 yards from the nest was a large, old, hollow Fir tree, and in this I sat till the female returned to her nest. My attendant then quietly approached the spot, when she flew out of the nest and sat on a low bank 2 or 3 yards from it: then she uttered her "*tiss-yip*," which I know so well, and darted away among the Pines. My man retired, upon which she soon returned, and having called for a few minutes in the vicinity of the nest, she ceased her note and quickly entered. Again she was quietly disturbed, and sat on a twig not far from the nest. I heard her call once more, and then shot her. There were five eggs, which were slightly incubated.

* * * * * *

"My second nest was placed on the side of a steep bank on the ground. The third was similarly placed, and composed of coarse grass and moss, and lined with black horse-hair. In each of these nests the number of eggs was five.

"Another nest, taken on the 1st June, with four eggs, was placed on the ground on a sloping bank, at the foot of a small thin bush. It was composed as usual of coarse dry grass and moss, and lined with finer grasses and a few hairs. The eggs were five or six days incubated.

"Another nest, with four eggs, was placed on the ground, under the inclined trunk of a small Fir. The same materials were used.

"Another nest, containing four eggs, was placed on a sloping bank and quite exposed, there being little or no herbage to conceal it. It was composed as before, with the addition of a few feathers in the outer portion of the nest.

"Another nest was at the roots of a Fern growing on a very steep bank. The new shoots of the Fern grew up above the nest, and last year's dead leaves overhung it and entirely concealed it.

"Another was placed on a sloping bank, immediately under the trunk of a fallen and decayed Pine. On account of the irregularities in the ground, the trunk did not touch the ground where the nest was by about 2 feet. This was again an instance of contrivance for the nest's protection. It was composed of the same materials as usual.

"Another was among the branches of a shrub, right in the centre of the bush and on the ground, which was sloping as usual.

"Another nest, with four eggs, taken on the 3rd June, was placed in the steep bank of a small stream only 3 feet 6 inches above the water.

"The above examples will give a very fair idea of the situation of the nest; and it now remains only to describe the eggs, which average ·56 long by ·44 broad. The largest egg which was measured was ·62 long and ·45 broad, and the smallest measured ·52 long and ·43 broad. The ground colour is always pure white, more or less spotted with brownish-red, the spots being much more numerous, and frequently in the form of a rich zone or cap, at the larger end. Intermixed with the red spots are sometimes a few purplish-grey ones. Other eggs are marked with deep purple-brown spots, like those of the Chiff-chaff, and the spots are also intermingled with purplish-grey. Some eggs are boldly and richly marked, while others are minutely spotted. The egg also varies in shape; but, as a general rule, they are rather short and round, resembling in shape those of *P. trochilus*. In returning from Cashmere, on the south face of the Pir-panjal Mountain and close to the footpath, I found on the 15th June a nest of this bird with four young ones. This nest was placed in an unusually steep bank. Half an hour after finding the nest, and perhaps 1,000 feet lower down the hill, I stood upon a mass of snow which had accumulated in the bed of a mountain stream."

Captain Charles R. Cock writes to me that he "took numbers of nests at Sonamerg, in the Sindh Valley in Cashmere, during a nesting trip that I took in 1871 with my valued and esteemed friend W. E. Brooks, Esq. Although at the time of our finding the nest of this warbler we were about 80 miles apart, yet we both found our first nest on the same day—the 31st May. I believe he was by a couple of hours or so the winner, as I do not think the egg had ever been taken before.

"Breeds in May and June on the ground in banks; makes a globular nest of moss, well lined with fine grass, musk-deer hair, or horse-hair. It lays five eggs, white spotted with rusty red, inclining to a zone at the larger end."

Typically the eggs of this species are broad ovals, slightly compressed towards one end; the ground pure white and almost perfectly devoid of gloss, speckled and spotted with red or purplish-red, the markings, most dense about the large end, often forming an irregular mottled cap or zone. These are the general characters, but the eggs vary very much in shape, size, colour, and density of markings. Some eggs are almost spherical; others are somewhat elongated; others slightly pyriform. As a body, alike in shape and coloration, they remind one of the eggs of many species of Indian Tit, especially those of *Lophophanes melanolophus*. In some eggs the markings are a slightly brownish brick-dust red, moderate sized spots and specks scattered pretty thickly over the whole surface of the eggs, but gathered into a dense, more or less confluent, zone or cap towards the large end. Intermingled with these primary markings, a few pale purple spots are scattered towards the large end of the eggs. In other eggs the markings are mostly mere specks, and in this type of egg the specks are mostly brownish-purple, in some almost black. Occasionally an egg is almost entirely spotless, having only towards the large end a clouded dingy reddish-purple zone. In some eggs again the colour of the markings is pale and washed out. As a rule, the eggs in which the markings are of the brick-dust red type have these larger, bolder, and more numerous, while those in which the markings are purple have them of a more minute character.

The shape of the egg, as already noticed, varies much, being sometimes longer than those of *P. trochilus,* and at other times very much of the same rounded shape. Frequently they are more pointed at the smaller end than those of *P. trochilus* usually are. The texture of the egg is similar to that of *P. trochilus,* with scarcely any gloss. The ground colour is always pure white, and the markings, which are always more or less plentiful, are either reddish-brown or purple brown, intermingled sparingly with lighter or darker purple grey.

Some eggs contain hardly a speck of the purple grey, while others have considerable blotches of that colour scattered amongst the red spots.

Some eggs are scantily marked, and have the spots very small; while others are densely spotted and blotched, the spots often being more or less confluent at the larger end. Frequently they accumulate round the larger end in the form of a confluent zone. The variety with deep purple brown spots, which is the rarest, resembles those of *P. rufa* in miniature; but, as a rule, the egg bears a much stronger resemblance to that of *P. trochilus,* though it is of course much smaller. *As far as colour goes,* the representations in Hewitson's work of the eggs of *Parus cristatus, Parus cæruleus, P. rufa,* and *P. trochilus* will give a very correct idea of the different varieties of the egg of the present bird.

The greatest number of eggs found in any nest by Captain Cock and Mr. Brooks was five; frequently, however, four was the number upon which the bird was sitting; eggs partially incubated. On the Pir-panjal Mountain, just below the snows, a nest with four young ones was found on the 15th June, so that, though five seems to be the usual number, the bird frequently lays only four.

In length the eggs vary from 0·52 to 0·62, and in breadth from 0·43 to 0·47; but the average of fifty eggs carefully measured was 0·56 full by 0·44.

566.—*Reguloides proregulus, Pall.*

Captain Cock has the honour of being the first to take, and, I believe, up to date the *only* oologist who has ever taken, the nest and eggs of the Dalmatian Warbler. Mr. Brooks tried hard for the prize, but he searched on the ground and so missed the nest. He wrote to me from Cashmere, just about the time (June 1871) that Captain Cock found the nests he obtained: "I have been utterly unable to do anything with *R. proregulus.* I shot a female, with an egg nearly ready to lay, when I first went to Goolmerg, but though I often heard the males singing, I never could find any indication of the nesting female. The feeble song, like that of *P. sibilatrix,* alluded to by Blyth as being that of *R. superciliosus,* is not that of this latter bird, but of *R. proregulus.*"

Later in the Journal of the Asiatic Society he noted that "Captain Cock took the nest and eggs at Sonamerg. It builds, like the Golden-crested *Regulus,* up a Fir tree, at from 6 to 40 feet elevation, on the outer ends of the branches. The nest is of moss, wool, and fibres, and profusely lined with feathers. Eggs, four or five, pure white, profusely spotted with red and a few spots of purple grey. Size, 0·53 by 0·43."

Later still he added in the IBIS: "Captain Cock writes from Sonamerg: 'The second day I found my first nest with eggs. It was the nest of *R. proregulus*. I shot the old bird. Three eggs. These nests are often placed on a bough high up in a Pine tree, and are domed or roofed, made of moss, and lined with feathers. I took another one to-day with five eggs, and shot the bird just as it was entering the nest. This was on the bough of a Pine, but low down. I know of two more nests of *R. proregulus*, all on Pine trees, from which I hope to take eggs.'

"After describing the nest of *R. superciliosus* before quoted, and saying that it was lined with the hair of the musk-deer, he adds: 'In this the nest differs from that of *R. proregulus*, which lines its nest with feathers and bits of thin Birch bark; and the nest of *R. proregulus* is only partly domed.'

"I measured four eggs of *R. proregulus* which Captain Cock kindly gave me, and the dimensions are as follow: ·55 by ·44, ·53 by ·43, ·53 by ·43, and ·54 by ·43. They are pure white, richly marked with dark brownish-red, particularly at the larger end, forming there a fine zone on most of the eggs. Intermingled with these spots, and specially on the zone, are some spots and blotches of deep purple-grey. The egg is very handsome, and reminds one strongly of those of *Parus cristatus* on a smaller scale. The dates when the eggs were taken are 30th May and 2nd June, and the place Sonamerg, which is four marches up the valley of the Sindh River."

Captain Cock himself tells me that he "took several nests of this bird at Sonamerg in Cashmere in Pine forests. It breeds in May and June, making a partially domed nest, which is sometimes placed low down on the bough of a Pine tree, sometimes on a small sapling Pine where the junction of the bough with the stem takes place, and at other times high up on the outer end of a bough. It lays five eggs like those of *superciliosus*, only smaller. The nests I found were all lined with feathers and thin Birch bark strips. I never found a hair lining in any of this bird's nests. The outer portions of the nest consisted of moss and lichen, arranged so as to harmonize with the bough on which it was placed. The nests are compact little structures."

The eggs of this species closely resemble those of *R. superciliosus*, but are smaller, and, to judge from a few specimens taken by Captain Cock that I have seen, they are somewhat shorter and broader.

Texture smooth, without any perceptible gloss. Ground colour pure white, spotted freely and principally towards the larger end with red: brick-dust red would perhaps scarcely be a correct term. The colour would be obtained by mixing a little brown and a good deal of purple with vermillion, or by mixing Indian red with a little Venetian red. At the larger end they have an irregular zone of small, more or less confluent, spots and specks of this red, mingled with reddish or brownish purple, and a few specks and spots of the red scattered over the rest of the surface of the egg.

This egg may also be well described, as regards colour and mode of marking, by saying that it resembles the illustration in Hewitson's work of the eggs of *Parus cristatus*, except that the egg of *R. proregulus* has a distinct zone of nearly confluent spots, and their colour is more of a *brownish*-red than those shown in the plate above referred to, which by-the-by do not correctly represent the colour of the spots upon the eggs of *P. cristatus* which I have seen. These spots are coloured with too much of a tendency towards crimson instead of brownish-red.

Three of the eggs taken by Captain Cock varied from 0·53 to 0·55 in length, and from 0·43 to 0·44 in breadth.

570.—*Abrornis cantator, Tick.*

A nest containing a single egg has been sent me as that of the Lesser Black-browed Warbler. It was found in May in Native Sikhim, at an elevation, it is said, of 12,000 feet. It was suspended to the tip of a branch of a tree at a height of about 8 feet from the ground. The nest is a most lovely one; but I confess that I have doubts as to its really belonging to this species.

The nest is, for the size of the bird, a large watch-pocket, some 6 inches in total length and 3·5 in breadth, composed entirely of white, satiny, seed down, densely felted together to the thickness of half an inch. The lower part, sides, and back, very thinly, and the upper portion and the margin of the mouth of the pocket thickly, coated with excessively fine green moss and very fine soft vegetable fibre.

My sole reason for doubting the authenticity of the nest is that another *precisely* similar one was sent me by another collector, a European, as belonging to one of the *Æthopygas,* together with the female which he shot off the nest.

The present nest contained a pure white egg; the other spotted eggs. Both collectors I have no doubt were fully assured of the correctness of their identification, and it may be that both species of birds construct similar nests; but I entertain considerable doubts on this subject, and think it right to note the fact.

The egg is a very broad oval, pure white, and very glossy, and measures 0·6 by 0·49.

571.—*Abrornis schisticeps, Hodgs.*

Captain Hutton tells us that the Black-eared Warbler is "a common species in the neighbourhood of Mussoorie, at 5,000 feet, and commences building in March. A pair of these birds selected a thick China Rose bush trained against the side of the house, and had completed the nest and laid one egg when a rat destroyed it. I subsequently took two other nests in May, both placed on the ground in holes in the side of a bank by the road-side. In form the nest is a ball, with a round lateral entrance, and is composed externally of dried grasses and green moss, lined with bits of wool, cotton, feathers, thread, and hair. The eggs are three in number."

Two eggs of this species, sent to me by Captain Hutton, are similar to those of *albo-superciliaris* and *xanthoschistos,* but perhaps a trifle smaller. They are very perfect ovals, pure white, and rather glossy.

They both measure 0·62 by 0·48.

572.—*Abrornis xanthoschistos, Hodgs.*

This and the next species are very closely allied. According to my interpretation this present species is the slightly smaller bird, much bluer above, common in Sikhim and Nepal but not found west of the Ganges; while *albo-superciliaris* is the larger and somewhat browner bird, very common everywhere west of Nepal, and occurring, but sparingly, in Sikhim. Such at least is my present view.

The Grey-headed Warbler, which has been erroneously figured in LAHORE TO YARKAND as *Abrornis albo-superciliaris,* the names of the birds having been reversed, breeds, according to Mr. Hodgson's notes, both in Nepal and Sikhim up to an elevation of 6,000 or 7,000 feet. They lay in May three or four pure white eggs. They make their nest on the ground in thick bushes, or in holes in banks, or under roots of trees. The nest is a large mass of moss and dry leaves, somewhat egg-shaped, with the entrance at one end, some 6 inches in length, 4 inches in breadth, and 3·5 in height externally, and with an oval entrance about 1·5 high by 2·25 wide. Inside it is carefully lined with moss roots. Both sexes assist in hatching and rearing the young, which are ready to fly in July.

From Sikhim Mr. Gammie says: "I found one nest of this species at Rishap, at an elevation of 5,000 feet, on the 20th May. The nest was in thin forest, near its outer edge, and placed on the ground beside a small stem. It was domed, and composed entirely of moss, with the exception of a few fibres in the hood or dome portion, and was lined with Thistle down. The exterior diameter was 3·3, the height 3·2: the cavity was 1·6 in diameter, and only an inch in depth below the lower margin of the entrance, which was the rim of the true cup, over which the hood was drawn. The nest contained four fresh eggs."

The eggs are very similar to, but smaller than those of, the next species—very broad ovals, a good deal pointed towards one end, pure white, and faintly glossy. In length they vary from 0·53 to 0·58, and in breadth from 0·45 to 0·49.

573.—*Abrornis albo-superciliaris, Blyth.*

Throughout the Himalayas south of the first snowy ranges, and in all wooded valleys in rear of these, from Darjeeling to Murree, the White-browed Warbler appears to be a permanent resident.

I have received its nests and eggs from several sources, and have taken them in the Sutlej and Beas Valleys myself. They lay in the last week of March, and throughout April and May, constructing a large globular nest of moss, more or less mingled exteriorly with dry grass and lined thinly with goat's hair, and then inside this thickly with the softest wool or, in one nest that I found, with the inner downy fur of hares. The entrance to the nest is sometimes on one side, sometimes almost at the top, and is rather large for the size of the bird. The nest is almost without exception placed on a grassy bank, at the foot of some small bush, and usually contains four eggs.

Talking of this species and writing from Almorah on the 17th May Mr. Brooks said: "I have just taken a nest. It was placed on a sloping bank side near the foot of a small bush. The bank was overgrown with grass. The nest, which was on the ground, was a large ball-shaped one, composed of very coarse grass, moss roots, and wool, and lined with hair and wool. It contained four pure white glossy eggs, which were much pointed at the small end. I shot the bird off the nest. I had already frequently met with fully grown young birds of this species."

Writing from Dhurmsala Captain Cock remarked: "On the 8th April I found a nest of this species containing four white eggs; it was placed on the ground, under a bush, on a steep bank. The nest was globular, with rather a large entrance hole, and was made of moss, with dry grass outside, then black hair of goats, and thickly lined with the softest of wool: *no feathers* in the nest. I caught the bird on the nest; it is common here."

The eggs are pure white, and generally fairly glossy. In texture the shells are very fine and compact. The eggs are moderately broad ovals, much pointed towards the small end, and vary from 0·6 to 0·65 in length, and from 0·48 to 0·52 in breadth; but the average of twenty eggs measured is 0·63 by 0·5 nearly.

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574 *bis.—Abrornis chloronotus, Hodgs.*

The Grey-faced Warbler, Which, though long confounded with *proregulus*, Pallas, is really the bird redescribed (IBIS, 1867, p. 27) by Blyth, as *maculipennis*, breeds, as it appears from Mr. Hodgson's notes, in the central region of Nepal from May to July. It makes, according to Mr. Hodgson's papers, a beautiful hanging nest suspended from some twig or spray, at heights of from 3 to 6 feet from the ground, resembling those of several of the *Æthopygas*. The nest is shaped something like a Florence flask, some 6 inches in length and 3 inches in diameter externally, and is composed of green moss, moss roots, and vegetable fibres, compactly interwoven and lined with fine fibres; the aperture is on one side, about 1·5 below the point of suspension, and about 1·25 in diameter, and above it a little moss is hung downwards so as to form a sort of screen or portico, as in the nests of Sun birds. They lay, it is said, three or four eggs, and the eggs are figured as rather broad ovals, slightly pointed towards one end, white, speckled and spotted very faintly, except at the large end, where the markings have a tendency to become confluent, with rather pale red. The eggs measured 0·69 by 0·52.

The notes do not show that Mr. Hodgson himself took the nest that he figures, and I am obliged to say that, with Mr. Brooks, I suspect some mistake here. I cannot but doubt whether this species could make such a nest as is described and figured.

578.—*Abrornis castaneiceps, Hodgs.*

According to Mr. Hodgson's notes and figures the Chestnut-headed Warbler breeds in the central hill region of Nepal from April to June, laying three or four eggs, which are neither figured nor described. The nest itself is a beautiful structure of mosses, lichens, moss and Fern roots, and fine stems worked into the shape of a large egg, measuring 6 and 4 inches along the longer and shorter diameters; it is placed on the ground in the midst of a clump of Ferns or thick grass, with the longer diameter perpendicular to the ground. The aperture, which is about half way between the middle and the top of the nest and on one side, is oval, about 2 inches in width and 1·75 in height. Both sexes are said to assist in hatching and rearing the young.

580.—*Regulus himalayensis, Gould.*

Following Mr. Gray, but with great hesitation, I for the present retain the Indian Golden-crested Regulus as distinct from the European form.

All I know of the nidification of this species is that Mr. E. C. Buck, C. S., found a nest at Rogee, in the Sutlej Valley, on the 8th June, on the end of a Deodar branch 8 feet from the ground and partly suspended. It contained seven young birds fully fledged; no crest or signs of a crest were observable in the young; both the parent birds and the nest were kindly sent to me.

The nest is a deep pouch suspended from several twigs, with the entrance at the top, and composed entirely of fine lichens woven or interwined into a thick, soft, flexible tissue of from three-eighths to half an inch in thickness. Externally the nest was about 3½ to 4 inches in depth, and about 3 inches in diameter.

583.—*Sterparola curruca, Lath.*

After the most careful examination of an enormous series of White-throats from all parts of India with nearly a score of European specimens, I am unable to discover any constant difference sufficient to warrant the separation of *S. affinis,* Blyth. Individual specimens may be picked out of the Indian series, both considerably larger and considerably smaller than any of my European examples, but between the very largest and the very smallest there is a perfect and unbroken gradation of sizes, and I therefore consider that *affinis* must be suppressed.

Of the nidification of the Lesser White-throat within our limits, I only know that it was found in May, breeding abundantly in Cashmere in the lower hills, by Mr. Brooks. He did not notice it comparatively high up; for instance at Goolmerg, which, though not above 9,000 feet high, is at the base of a snowy range, he did not see it at all.

It builds a loose, rather shallow, cup-shaped nest, composed chiefly of grass, coarser on the exterior and finer interiorly, which it places in low bushes and thickets at no great elevation from the ground. The nest is more or less lined with fine grass and roots.

It lays four or sometimes five eggs.

My friend Mr. Brooks, who seems to have changed his mind once more as to the specific identity or the contrary of *S. affinis* and *curruca* since his last letter was published (STRAY FEATHERS, Vol. II, p. 332), writes to me just as this is going to the press: "*Curruca affinis.*—This species strongly resembles *C. garrula,* but is distinguished by the greater amount of white in the tail. It prevails over the North-Western Provinces, but is replaced from Buxar eastward by *C. garrula,* just as *Erythrosterna hyperythra* is replaced by *E. albicilla* in the same country.

"I found this White-throat tolerably numerous in Cashmere, where it appears generally distributed, occurring at from 5,500 to 6,500 feet elevation or thereabouts. It frequents places where there is abundance of brushwood or underwood, especially along the banks of rivers or near them.

"I found several nests, and they were all placed in small bushes, and from 4 to 6 feet above the ground One was in a bush on a small island in the Kangan River, which runs into the Sind River, and this nest I well remember was just so high that I could not look into it as I stood. The nests precisely resembled in size and structure those of *C. garrula* which I have seen at home, being formed of grasses, roots, and fine fibres, and I think scantily lined with a few black horse-hairs; but I forget this now. They were slight, thinly formed, nests, very neat but strong, and had bits of spiders' web stuck about the outside here and there. This appears to be the decoration this bird and *C. garrula* are partial too. They were not added, I think, for the purpose of rendering the nest inconspicuous, for there were just enough to give the nest a spotted appearance.

"The song of this species strongly resembles that of its congener, and is full, loud, and sweet. I found the nests by the song of the male, for he generally sings near the nest. The eggs don't differ from those of *C. garrula* in my collection."

I need hardly say that I am quite unable to accept *affinis* as a distinct species.

The eggs are somewhat broad ovals, typically a good deal pointed towards the lesser end. They vary, however, much both in size and shape; some are short and broad, decidedly pointed at the small end; others are more elongated, and some are almost regular elipsoids. The eggs have little or no gloss, the ground colour is white, with a more or less perceptible though very faint greenish tinge. Typically they are very Shrike-like in their markings, the majority of these being gathered together in a more or less dense zone near the large end. The markings consist of small spots, blotches, and specks of pale yellowish-brown, more or less intermingled with spots and specks of dull inky purple or grey; in many eggs there are very few markings, and these are mere spots exceptin the zone, while in others full-sized markings are scattered, though thinly, more or less over the whole surface of the egg. In some the zone is confluent and blurred; in others composed of small sharply defined specks and spots. Here and there a pretty large yellowish-brown cloud may be met with partially or entirely bounded by a narrow hair-like black line. Tiny black specks now and then occur, and little zigzag lines that might have been borrowed from a Bunting's egg; but these are not met with in probably more than one out of ten eggs.

In length the eggs vary from 0·6 to 0·75, and in breadth from 0·48 to 0·55; but the average of sixteen eggs is 0·66 by 0·5.

584.—**Enicurus maculatus, Vig.*

The Western Spotted Fork-tail breeds throughout the Himalayas west of Nepal and south of the first snowy range, along the banks of almost every mountain streamlet, between the elevations of 2,000 and 5,000 feet. The breeding season extends, according to locality and elevation, from the commencement of April until the middle of June.

The nest is almost always placed in close proximity to water, sometimes completely hidden in a rocky niche, sometimes on a bare ledge of rock more or less overhung by drooping Ferns, and sometimes on a sloping bank, at the roots of some old tree, in a very forest of Club Moss. The nest is cup-shaped, fully 4 inches across and from 2½ to nearly 4 inches in height, the cavity being sometimes shallow, sometimes deep. It is composed of very various materials—moss, moss roots, horse-hair, silky fibre, and the like; but a quantity of dead, more or less skeleton, leaves are always intermingled, and at times form the chief lining, which however, according to my experience, is more commonly fine rootlets.

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* Doubtless the more *correct* mode of spelling this word would be *Henicurus*, but the genus was *named Enicurus*, and I do not admit the right of one author to alter names given by another to please his own more accurate classical taste.

Three or four eggs are usually laid, but I have a note of five having once been brought in, all ready to hatch off, by one of my hunters.

Captain Hutton writes from the Dhoon: "The Spotted Fork-tail frequents the sides of streams and rivulets, flitting from rock to rock and stone to stone with a light and graceful movement, which is half flight, half hop. Its habits have obtained for it, among the European visitors to the hills, the name of the *Dhobi-bird*, or 'Washerman,' from its loving to frequent the places to which those worthies likewise resort to destroy our clothing. It selects a retired spot along the margin of some quiet streamlet, and there constructs its curious cup-shaped nest upon the ground among the plants and mosses which there abound. The nest is a deep cup, composed exteriorly of fine roots neatly interwoven with horse-hair and green mosses, and thickly lined with the gauze-like skeleton leaves of the Willows that fringe the margins of the stream; many of these skeleton leaves are likewise interwoven among the external roots. It has a neat and beautiful appearance in perfect keeping with the trim and dainty plumage of the bird itself.

"A nest taken on the 12th May, at the foot of the hills in the Dhoon, contained three faintly greenish-white eggs, sprinkled over with spots and blotches of rufous or rust colour. They were hard-set."

From Almorah Mr. Brooks remarks: "Common in all mountain streams. Mr. Horne found the nest near Bheem Tal, which was placed in the side of a rocky water-course, and was a large one composed of moss and fibres. Eggs three or four; ground colour white with a faint shade of green speckled rather sparingly with rusty brown; lays in Kumaon in May."

Captain Cock informs me that this species "breeds in May and June near Dhurmsala and in Cashmere. It makes a large solid nest of moss placed on a shelf of a bank overhanging a hill stream, but always well overlapped by the top of the bank, so that the nest is not observable. The nest is large for the bird, of a deep cup shape, lined with dry leaves and grass-roots. The birds usually lay four eggs, of which there are two distinct types of coloration, or I should say of the ground colour—one having a greenish ground covered with rusty spots, and the other a dirty pink covered with similar spots."

The eggs are oval, in shape resembling those of the Wag-tail, but differing from them in the comparative sparseness and clearness of the markings. The ground colour is generally a pale clear greenish-white, rarely a dingy carneous, and they are thinly spotted, speckled, and even streaked with yellowish or reddish brown. Where several of the spots occur close together, a nimbus of the same colour, but paler, more or less unites them, and a few somewhat faint brownish-purple spots and clouds, or an indistinct mottling of this colour, are here and there occasionally observable. The eggs vary much in size and shape—some are a good deal elongated and some conspicuously pyriform. They have very little, if any, gloss. In size they vary from 0·9 to 1·03 in length, and from 0·68 to 0·75 in breadth.

584 *bis.—Enicurus guttatus, Gould.*

When speaking of the previous species Dr. Jerdon remarks: "The nest and eggs of this bird have been brought me more than once, made of roots, fibres, and a little moss, with three or four eggs, greenish-white, with a few rusty brown spots."

This however, as he told me, occurred at Darjeeling, where only the present species, the Eastern Spotted Fork-tail, and not the preceding one, is found, and his remarks, therefore, apply to this species.

From Sikhim Mr. Gammie sends me the following:—

"*Henicurus guttatus* makes a similar nest to that of *H. schistaceus,* but a good deal neater. I have found only two nests of it: both unfortunately containing young—one three, the other four: both nests were on tiny ledges of moss covered rocks, a little above water mark, in beds of streams. The outer part of the nests were made flush with the natural moss on the rocks. One had but one skeleton leaf in the bottom, but the other was well lined with them. The eggs to judge from the broken shells are very much like those of *H. schistaceus.* It breeds in May and the beginning of June."

586.—*Enicurus schistaceus, Hodgs.*

The Slatey-backed Fork-tail breeds in the valleys of the Surjoo and Ramgunga in Kumaon, near the junction of which I obtained the nest with half fledged young in July, and thence eastwards in all the warmer mountain valleys, at elevations of from 1,500 to 3,500 feet, throughout the Himalayas and the various chains and hill systems running down from Assam to Burmah.

As far as I know Mr. Gammie was the first oologist who obtained the eggs. "He says: I found one nest this year in the Ryang, below our Chinchona plantation (Sikhim), at an elevation of about 2,000 feet, on the 4th May. It was close to the ground, on a natural ledge in the root of an uprooted tree, at the edge of a shady stream. It was cup-shaped but shallow, and composed of moss and lined with a few skeleton leaves and a few fibres. It measured 4·5 in diameter and 2 inches in height externally; the cavity was 3·1 wide and 1·5 deep. This nest contained four hard-set eggs."

Another nest of this species was sent me from Native Sikhim, where it was found in July, at an elevation of about 5,000 feet, in the hollow of a rock on the bank of a mountain torrent.

The nest was a small shallow cup, about 4 inches in diameter, composed externally of fine dry moss and a few blades of dead grass, and with a quantity of skeleton leaves incorporated in the substance of the nest, and more or less forming its inner surface, for it cannot be said to have any regular lining. It contained a single perfectly fresh egg.

The eggs are very regular ovals, only just a little compressed and pointed towards one end. The shell is very fine and fragile, and has a fair amount of gloss.

The ground colour is white, with the faintest possible greenish tinge, not noticeable until the egg is placed alongside of some other really pure snow-white egg; as for markings there is at the large end a small cap, composed of densely crowded specks and spots of brownish-red or dingy pale raw-sienna of varying shades and intensity, and a few specks of the same scattered over the rest of the egg, nowhere numerous but much more sparse towards the small end, where they are in some eggs absolutely wanting. In amongst the markings of the cap a few pale reddish or lilac purple clouds, as a rule faint and dull, underlie the more conspicuous brownish-red specklings.

All the eggs are very similar in appearance and uniform in size, and they only vary in length from 0·84 to 0·87, and in breadth from 0·63 to 0·67.

587.—*Enicurus scouleri, Vig.*

The only note that I have as yet received in regard to the nidification of the Little Fork-tail is from Mr. Brooks. He says: "I noticed a pair of these birds between Batwari and Dungulla, which appeared to have their nest in a very pecular situation. This was on the 11th May. In the middle of the foaming torrent of the Bhagiruttee was a large rock, over which the water rushed furiously in the form of a cascade. Through this cascade the birds dived or darted numbers of times, with either food or nest materials in their bills. They generally remained some minutes within the water, and from their attachment to the spot they evidently had their nest there. The place was perfectly inaccessible, and how ever the little birds managed to get through the sheet of rushing broken water without being swept away I do not know."

589.—*Motacilla maderaspatana, Gmel.*

The Pied Wag-tail breeds throughout India from north to south, only avoiding the low country of Bengal Proper. In the Himalayas it is never found, I believe, at elevations exceeding 3,000 feet, but it ascends the mountains of Southern India to any elevation at which water occurs, and breeds at Ootacamund.

Throughout the country, March, April, and May are the months in which they chiefly lay, more eggs being met with in April than in any other month; but on the Cauvery my friend Mr. H. R. P. Carter met with eggs both in December and January.

They always nest in the neighbourhood of water, but, with this sole reservation, they place their nests almost anywhere. These may be found in holes in banks, crevices in rocks, under stones, under clods of earth, amongst the timbers of bridges, in drains, holes in walls, on roofs, and in fact anywhere except on shrubs or bushes. The nests are always down on something solid, and that is about all that can be said.

In the middle of the River Jumna, at Agra, there is an iron buoy attached to the pontoon bridge, which is surmounted by an iron ring, which lies down nearly horizontal, and in this ring for several successive seasons a pair of Pied Wag-tails nested, within 5 yards of the road-way, and in full view of the thousands of passengers who daily cross the bridge. In the Chumbul, a little above its junction with the Jumna, a pair built in the clumsy old ferry boat which was but seldom used, and when the female was sitting she allowed herself to be ferried backwards and forwards, the male all the while sitting on the gunwale singing, making from time to time short jerky flights over the water and returning fearlessly to his post.

In this latter case the nest was nothing but one of those small circular ring pads, say 4 inches in external diameter and an inch thick at the circumference, which the women place on their heads to enable them to carry steadily their round bottomed earthen water vessels; a dozen tiny soft blades of grass had been laid across the central hole, and on these, of course bending them down to the surface of the massive boat knee on which the pad had been accidentally left lying, the eggs were laid.

The character and materials of the nest are quite as various as are the situations in which it is placed; as to character it varies from nothing (for they will lay in a tiny depression on the bare earth) up to a neat well formed saucer or shallow cup; as to materials, nothing tolerably soft seems to come amiss to them; fine twigs, grass-roots, wool, feathers, horse, cow, and human hair, string, coir, rags, and all kinds of vegetable fibres, seem to be indifferently used.

It is impossible to generalize satisfactorily in regard to the nidification of such irregular-minded birds as these, and it will be well to quote a number of different accounts to illustrate the matter properly; and I need now only add that four is the normal number of the eggs, that I have twice (out of perhaps an hundred nests) met with five, and that I have frequently found only three more or less incubated, as well as only three young ones.

First to quote an old note of my own recorded at Etawah:—

"Found three nests of this bird on the 14th March 1867 on the banks of the Jumna, near Sheregurh; two were built inside clusters of kunker rocks, completely under overhanging slabs, and one was so situated that one's hand could hardly reach it. The nests were circular, about 5 inches in diameter and about 2 inches thick, with a central 3 inch diameter and an inch deep depression. The nests were rather solidly woven with grass-roots and grass, and thickly and warmly lined—the one with cotton wool and a little sheep's wool and human hair; the other with cotton wool, a few soft duck's feathers, some soft tow, and several pieces of soft native cotton thread: the one contained four perfectly fresh, the other three slightly incubated, eggs.

"The third nest was under the curving side of a huge log of sâl stranded a few feet above the present water-level. It was very solidly woven of hair, a great proportion of which was human, and the rest of cows and horses. There were only two eggs, and they were fresh."

Captain G. F. L. Marshall tells me "that this bird breeds commonly in the Saharunpoor District on the flat roofs of the canal chokies, or in the small ventilating holes in the wall; sometimes it makes an elaborate and very neatly constructed nest of twigs and grass thickly lined with hair and feathers; at other times the eggs are deposited on the bare sand which lodges in the drain-pipes at the corners of the roof. The eggs are four in number, and differ much in size and colour."

Mr. A. Anderson remarks:—

"Several pairs of these Wag-tails breed annually at Futtehgurh; their favorite place appears to be the bridge of boats. The nest is usually placed inside a 'pigeon-hole,' either at the bow or stern of a boat, and is a large solid structure, well lined with wool and tow.

"The eggs are usually four in number, and I have known the same pair to lay a second clutch very soon after the first batch had been removed. In shape and colour they are not unlike the eggs of *Motacilla Yarrelli*, but of course a good deal larger. They do not begin to build till the end of April or beginning of May.

"Two years ago I found *M. maderaspatana, Columba intermedia,* and *Coracias indica,* a pair of each, building in the same boat: the Wag-tail's nest was on a rafter under the planks, and the other birds occupied "pigeon-holes" or niches at either end of the boat."

From Sambhur Mr. R. M. Adam notes that "the Pied Wag-tail is very common about all the open wells and tanks. They build during April and May. Although I had been looking out for the nest of this bird for some time, the first I found was on the morning of the 18th April. I then noticed an adult catching a large dragon-fly, and as it did not proceed at once to devour it, I thought that it might be for its young. After flirting about for fully five minutes with the fly in its bill, it popped into a hole at the very water-level of a tank near to my house, and immediately re-appeared without the fly. On examining the hole I found a nest containing three full-fledged nestlings and one addled egg. The nest was a longish oval, about 7 inches in length and 4 inches in breadth; in thickness it was about 2 inches. It was composed of pieces of twine, cloth, fibres of plants, feathers, and a large proportion of human hair. Round the outer edge there was a rim formed, I presume, to keep the young in the nest. The egg receptacle was quite flat, and lined with a few feathers, horse-hair, wool, and fibres firmly matted together. On the 1st May I observed another bird building, and found its nest in a hole in the bank of an open well. The nest had just been commenced; on the 3rd it was finished, and on the 7th it contained two eggs, which I took with the nest. Another bird I watched finished its nest on the 7th May, and on the 9th, 10th, 11th, and 12th it laid an egg each day. The eggs are dirty white in colour, much speckled and spotted with pale brown and dusky; at the broad end the spots are massed together, while in one egg they form a zone."

From Hoshungabad Mr. E. C. Nunn writes: "On the 11th April we found a nest in a low bank in the bed of the Nerbuddah. It was composed of a mixture of wool, hair, feathers, grass-roots, pieces of thread and hemp, and bits of cotton. On the very next day we found a second precisely similar nest in a similar situation. Each nest contained two fresh eggs."

At Ahmednuggur, in the Deccan, the Rev. H. J. Bruce recorded the following note:—

"*26th April* 1869.—Found a nest of this bird containing four fresh eggs. The nest was situated on a shelf under a projecting rock in the perpendicular bank of the river; was but 6 or 8 inches above the water-level and 15 inches from the edge of the bank. It was composed of coarse sticks upon the lower and outer sides, above which were finer sticks and roots of grass lined with hair. The whole was so loosely put together that it was with difficulty removed from its place. The outer side was built up with sticks nearly 4 inches, while the inner side was scarce an inch thick.

"The egg cavity was 2½ inches in diameter and 1¼ inch in depth. The eggs were of bluish-white colour, thickly covered with light brown blotches which often run into each other. On the larger end of one specimen these blotches form an irregular circle, while the other three have the whole larger end more or less thickly covered."

Writing from Poona about this species Mr. E. Aitken remarks:—

"I found a nest on the 17th of last April. It was on one of the barrels on which the platform of the boat club floats. By raising one loose plank, I got a look at the nest and thought I distinguished three young ones, nearly fledged. They had a nest in the very same situation (on the identical barrel, I believe) last year."

Mr. W. Davison says: "The Pied Wag-tail breeds in April and May on the Nilghiris. I have taken the nest from the bank of a stream, between the beams of an old bridge, and for several years in succession from a slit in a rock in the Ootacamund Lake. The nest is chiefly composed of grass and grass-roots, lined with fine dry grass."

Writing from the banks of the Cauvery Mr. H. R. P. Carter records that on the 17th December 1866 he "found a nest in the space between the girder of a bridge and the wall. The nest was made principally of coir lined with bullock's hair; it was shallow and not well formed. Eggs, three, very broad and blunt at one end and pointed at the other.

"*20th January* 1867.—Again examined the old nest and found that it had been strengthened by some rags, otherwise was much as last year's. There were two eggs in it this time."

The eggs differ very much in size and shape, and vary from a long to a rather broad oval. They are always more or less pointed towards the small end. In the general shade of the egg and in the colour and extent of the markings they vary excessively. There are, however, two leading types—the one in which the prevailing tint is greenish, a greenish-white ground with greenish-brown markings; and the other in which the general colour is brown, dingy wood-brown markings on a pale earthy white ground. Each of them again is divisible into two classes—those in which the markings are comparatively distinct, and leave a good deal of the ground colour, especially towards the small end, visible; and those in which they are nearly confluent everywhere, only leaving the ground colour to peep through in specks or as a feeble paler mottling. Even this last class is again divisable into two types—one in which the markings are excessively close speckling; and the other in which they are close smudgy mottling. All the varieties that their eggs exhibit are reproduced amongst those of our Larks, and both in their nesting habits and the character of their eggs there seem stronger affinities between the Wag-tail and the Larks than would be surmised from their plumage and external appearance. Generally it may be said that the ground colour (of which more or less is visible in different specimens) varies from pale brownish to greenish white. The markings are clouds, smudges, streaks, spots, and specks; sometimes all these forms are exhibited in one and the same egg, but most commonly one or other form greatly predominates, so as to give its own peculiar character to the egg. The colour of the markings is somtimes earthy brown, sometimes dark olive brown, and sometimes purplish-brown. In some eggs the whole surface is covered with markings more or less uniformly; in others they are far more dense on the large end, and comparatively sparse elsewhere.

In length these eggs vary from 0·82 to 0·98, and in breadth from 0·6 to 0·7; but the average of twenty-nine eggs is 0·9 by rather less than 0·66.

590.—*Motacilla luzoniensis, Scop.*

The so-called White-faced Wag-tail breeds during May and June in Cashmere; that is to say, *a* Black-and-white Wag-tail, which has the entire back black in full breeding plumage, breeds there, and I consider this bird identical with *luzoniensis*, other stages of which (*vide* STRAY FEATHERS, Vol. I, p. 27) are represented by *alboides*, Hodgson, *lugens*, Tem., *nec*, Pall., and *japonica*, Swinhoe.

Mr. Brooks however, who himself took several nests, renamed this Wag-tail as *M. cashmerensis,* but he has subsequently (STRAY FEATHERS, Vol. II, p. 456) changed his views, and considers the black-backed Cashmere bird to be the summer form of *M. personata,* Gould, and identical with *M. Hodgsoni,* Gray, but *not* with *luzoniensis.*

Well this Wagtail (*luzoniensis* as I am still inclined to think, but be it what it may) nests in holes, under large stones, in shingle beds of rivers, and in accumulations of drift wood.

Mr. Brooks says: "Cock and I took several nests during our trip to Cashmere. The birds build under large boulders in the beds of rivers, where they would be destroyed if a flood took place causing the river to rise. One nest found by Captain Cock was inside a heap of drift wood."

Later, writing from the valley of the Bhagiruttee in the hills north of Mussoorie, he says: "*Motacilla Hodgsoni,* Gray, (*M. personata,* Gould) breeds near Dangulla and about Deralee, where there are suitable gravel beds in the river. On the 11th May a female which I dissected had an egg nearly full sized. Some of the birds I saw at this time had grey backs, others partly grey and partly black, and some had pure black backs. The male has a pretty song."

The eggs are typically somewhat broad ovals, pointed towards the small end, but somewhat more elongated, and occasionally slightly pyriform, varieties occur. The ground colour is greyish-white, sometimes with the faintest possible brownish tinge. Some are very minutely and thickly speckled all over, but most thickly at the large end, with pale brown and brownish-grey; in others the markings, though still minute, are brighter, bolder, and more sparse, with here and there very faint, scarcely noticeable, inky purple or grey clouds underlying the primary markings. The eggs, as might be expected, often very closely resemble those of both *M. alba* and *M. Yarelli,* but are, I think, slightly larger.

In length they vary from 0·76 to 0·8, and in breadth from 0·6 to 0·64.

592.—*Calobates boarula, Penn.*

The Grey-and-yellow Wag-tail breeds plentifully, Mr. Brooks tells us, along the mountain streams of Cashmere, at elevations of above 6,000 feet. Mr. Brooks separates the Indian race under Pallas's name of *melanope* on account of its shorter tail and slightly smaller size as compared with English specimens. A perfect intergradation of size however is, I am informed, met with, if not only English, but German and Russian examples are compared, and I cannot at present consider the Indian birds as distinct.

All the nests of which I have received any record were taken during the latter half of May and the early part of June.

Four or five appear to be the usual number of eggs.

Mr. Brooks remarks: "I have examined a good series of both of *Calobates sulphurea* and *C. melanope,* Pallas, and though the coloration is the same, there is such a very great difference in length of tail that I cannot conclude them to be the same.

"The situation chosen for the nest is different, and *C. melanope* is not nearly such a noisy bird when breeding as *C. sulphurea.*

"One nest that I found in Cashmere, at Kagan, was placed in a small bush on an island in the Sind River, about 5 feet above the ground. The situation was that of a Finch's nest! It was composed of moss, fibres, &c., and lined with hair, a neat compact nest, and placed in the forks of the branches near the top of the bush.

"The other nest was placed under a large boulder on the dry bed of the river, and was composed of the same materials. The eggs out of this nest were more pinkish than those of any *sulphurea* I have ever seen."

The eggs are pretty uniform, both in size and shape—broad ovals at the larger end, and much compressed and pointed towards the small end. Typically the ground colour is yellowish or brownish white, closely mottled and clouded all over with pale yellowish-brown or brownish-yellow. These markings, always pale, dull, and *smudgy*, are somewhat darker in some specimens and lighter in others. Almost all the eggs have a very fine black hair-like line twisted about somewhere near the large end. Mr. Brooks took a nest, which he feels certain belonged to this bird, in which the eggs are similar in shape, size, and character of markings to those which I have above described as typical, but which had the ground colour pale salmon pink and the mottling a darker, slightly brownish, salmon colour.

In length the eggs vary from 0·68 to 0·73, and in breadth from 0·53 to 0·55.

594.—*Budytes calcaratus, Hodgs.*

The Black-backed Yellow-headed Wag-tail, figured in Gould under Hodgson's later designation of *citreoloides*, must on the whole, I think, stand as above. I was at first inclined to think that *calcaratus* was a distinct species that none of us had yet obtained. I now incline to the belief that this name refers to the same bird as is figured by Gould as *citreoloides;* of course the Grey-backed Yellow-headed Wag-tail with a black cowl on the upper back is the true *B. citreola,* Pallas. The present species breeds in Cashmere, where it is excessively plentiful during the season, but only one Indian oologist appears as yet to have taken its eggs.

Mr. W. Theobald makes the following remarks on its nidification in the Valley of Cashmere:—

"Lays in the third week of May; eggs, four in number, ovato pyriform; size, 0·95 by 0·70; colour, pale grey, thickly dotted and ringed with greyish-brown and greyish-neutral mingled together; a depression in soft earth beneath a rock; valley generally."

596.—*Pipastes agilis, Sykes.*

The Indian Pipit, so common throughout the plains of India from north to south during the cold season, breeds but sparingly if at all within our limits.

In LAHORE TO YARKAND, page 75, I pointed out the distinctions between typical specimens of the Indian and the Tree-pipit, *P. plumatus,* Mull.=*P. arboreus,* Bechst. More or less intermediate forms do occur, but on the whole I am inclined to agree that the two are really good and distinct species.

The distinctions pointed out *loc. cit.* have been summarized and added to by Mr. Brooks, who has made this group an especial study, and whose *matured* opinion on such a point is entitled to great weight. He says: "*P. agilis* has a long drawn sibilant note, never uttered by *P. arboreus,* and its haunts are never strictly arboreal. The general green tinge, the green edgings to the tail, the very pure white on the posterior part of the supercilium, which changes to a deep buff anterior to eye, and the utterly different mode of striation on the back, separate this bird from *arboreus.*"

Accepting this bird as distinct, all I know of its nidification is that a loose grass nest, containing a single egg, taken on the 3rd June, and a male bird, said to have been shot at the nest, were sent to me from Upper Kooloo. The nest was found on the snowy range bounding Spiti, at an elevation of probably 11,000 feet, at any rate above the Pines.

Even if this was not the nest of the Pipit, the latter must from the season have been breeding somewhere near, and this chiefly is my reason for mentioning the fact.

I entertain no doubt of the good faith of my correspondent; but he is no ornithologist, and the egg is so large, and so closely resembles those of *Heterura sylvana,* of which several accompanied it, that I feel by no means sure of its authenticity. The egg is a moderately broad oval, slightly compressed towards one end, has a greyish-white ground, and is thickly and minutely speckled and spotted all over with two different shades of rather pale dingy purple. It is clearly the egg of a Pipit of some kind or other, but, as I said before, I cannot vouch for its authenticity. The egg has only a very faint gloss. It measures 0·93 by 0·68.

597.—*Pipastes plumatus, Mull.*

A pair of Tree-pipits, obviously breeding, were brought to me *in the flesh* at Kotegurh on the 6th May, together with a nest containing three fresh eggs.

They were all alleged to have been procured two days previously on the snowy hills north-east of Kotegurh and on the other side of the Sutlej.

The nest was nearly circular, a shallow saucer, composed of grass and lined with fine grass stems and a little hair, and had been placed on the ground, at the foot of a tuft of grass. It was found high up, close below the snow line, while the men were shooting *Tetraogallus himalayanus.*

No one can rely upon what native hunstmen say, but the birds, as dissection showed, *were* breeding, and I believe the eggs to be genuine.

They are very broad ovals, very slightly compressed towards one end. The shell has but little gloss; the ground colour is greyish-white, with a faint pinkish tinge, and the eggs are pretty thickly speckled and spotted all over, and very densely so at the large end, with dull purple and purplish-brown.

They vary from 0·83 to 0·86 in length, and from 0·59 to 0·67 in breadth.

598.—*Pipastes montanus, Blyth.*

Mr. Davison brought me a skin, nest, and four eggs of the Nilghiri Pipit from the Nilghiris, and informs me that they were obtained in May at Neddivattam, at an elevation of about 6,500 feet; the nest is a shallow cup of grass loosely put together and lined with finer grass; he snared the bird on the nest. He remarks:—

"This bird breeds at Ootacamund and its immediate vicinity, and also down the slopes to about 6,000 feet. The nest is placed under a tuft of grass, or bush, on the side of a hill, and is composed of dry grass lined with finer grass. The eggs, two or three in number, are pale dingy greenish-brown, thickly mottled with a darker shade. The bird breeds in April and May."

The eggs vary in shape from rather broad to moderately elongated ovals, and one of them is a good deal compressed and somewhat pointed towards the small end; they are dull looking eggs with scarcely any gloss; the ground colour, of which, by the way, the markings leave little visible, varies in every egg; in the four before me, it is pinkish-,greenish-,greyish-,and creamy-,white, and it is freckled, mottled, streaked, and blotched all over, but as a rule most densely towards the large end, with dingy brown or purple, of different shades in different eggs, or both; in one egg the whole of the markings are a dingy-, brownish-,pinkish-,purple; in another they are a mixture of sepia brown and very pale inky purple; in another all sepia brown of different shades; while in a fourth the brown is slightly yellower.

In length the four eggs vary from 0·79 to 0·89, and in breadth from 0·59 to 0·62.

600.—*Corydalla rufula, Vieill.*

The Indian Tit-lark breeds, though, according to my experience, somewhat sparingly, all over the plains of India, as also in the Himalayas, up to elevations of 5,000 or 6,000 feet.

I have very seldom found its nest; the few I have seen have all been placed on the ground and under or in the midst of tufts of grass. All have been shallow saucer-like nests, composed of grass and roots and lined very scantily with finer roots. Three eggs is the largest number I have seen in one nest.

The breeding season certainly extends from March to July, but the three nests I have myself taken in Upper India were all found in April.

A nest of this species, taken by Mr. F. R. Blewitt at Saugor on July 16th, and kindly sent to me by that gentleman, was a shallow ragged saucer some 4 inches in diameter with an egg cavity an inch deep. It was composed almost entirely of very fine brown rootlets, looking for all the world like a lump of oakum, intermingled with a few pieces of grass, and with a mere pretence for a lining of fine grass roots. The fine oakum-like rootlets were fitted together so as to make the bottom and sides of the nest, comparatively speaking, very firm.

Captain G. F. L. Marshall tells us that "the Indian Tit-lark breeds in the Saharunpoor District in March, the eggs being hatched in the first-half of April.

"The nest is placed on the ground under a tuft of grass or against a clod in the open field. A nest taken on the 24th March with three slightly set eggs was placed against, and half under, a large clod, with grass growing on it, which bending over completely concealed the nest; it was cup-shaped and composed of grass and grass roots and fibre, much coarser and more strongly put together than the nest of the Crested Lark. There was no perceptible lining. The egg receptacle was $2\frac{1}{4}$ inches in diameter and nearly 2 inches deep. The eggs, three in number, were of a slightly yellowish-white colour, profusely and boldly spotted and blotched with yellowish-brown and dingy purple, the markings being most numerous towards the larger end, where they exhibit a tendency to form an irregular confluent cap."

According to Mr. Hodgson's notes this species "breeds in Nepal, laying in March and April, the young ones being ready to fly in June. They build their nests under the shelter of some clump of grass or overhanging clod, constructing it of dry grass and cow hairs, which they round into a very shallow pad-like nest. They lay three or four eggs."

Dr. Jerdon states that "it makes its nest on the ground in April and May, under a slight prominence, or in a tuft of grass, or at the edge of a bush; and lays three or four eggs of a greenish ground colour, with numerous small brown specks chiefly on the larger end."

The eggs, very variable both in shape and tint, are, generally, moderately broad and rather perfect ovals, scarcely at all pointed towards the small end, and in size and shape closely resemble those of the Common Tit-lark. The ground is typically a brownish or greenish-stone colour, and it is thickly streaked, clouded, and streakily spotted sometimes with dull brownish and purplish red, and sometimes with brown of different shades, or brown intermingled with pale purplish-grey. The markings are not unfrequently greatly more dense at the large end, where they have a tendency to become confluent, and where they are often more or less united by a dull dingy purple or brownish nimbus. Some eggs are altogether paler, having the ground a greyish-white and the markings minute, more speckly, and better defined than those first described.

In length they vary from 0·75 to 0·86, and in breadth from 0·57 to 0·63.

603.—*Agrodroma similis, Jerd.*

Miss Cockburn says: "The Nilghiri Tit-lark is considered a very rare bird even on the Nilghiris. It is also extremely shy, never approaching the habitation of man, and if a human being trespasses on its wild retreat it instantly mounts high up in the air, as if trying to escape his reach.

"Dr. Jerdon has figured this species in his 'Illustrations of Indian Ornithology,' and says he has met with it 'on the Segoor Pass of the Nilghiris among rocky ground.' A nest of this rare bird was found on this very Pass under a shelving rock; it was formed of fine grass and contained only one egg. No doubt the bird would have laid others, but it was too precious to an oologist to be left even for a day, and therefore was brought safely away. This egg was very much like a Lark's, except that a greater number of spots make it appear darker. It was found in the month of March."

Subsequently she obtained another nest and favoured me with two eggs. They very closely resemble those of *Alauda malabarica*, Jerd. *nec* Scop., but are more glossy. They are moderately elongated ovals, somewhat compressed and pointed towards one end, with a creamy white ground densely but *very minutely* freckled and speckled all over with what on close examination proves to be very pale yellowish-brown and pale purplish-grey. The markings are almost uniformly distributed over the whole surface, but they are slightly more dense at the large end.

These eggs were taken on the 16th May, and measured 0·85 and 0·86 by 0·65.

604.—*Agrodroma Jerdoni, Finsch.*

I have never myself succeeded in finding a nest of the Brown Rock-pipit, and looking to the eggs of this species sent me by Captain Marshall, those brought by Mr. Thompson's men from Gurhwal and described in LAHORE TO YARKAND, page 76, cannot have belonged to it.

From Murree Captain C. H. T. Marshall writes: "Rough made nest of grass. Breeds from May till middle of July low down the hill side. Lays four eggs, much resembling the eggs of other species of this family. We took six nests and twice found the Common Cuckoo's eggs in them. They do not breed above 6,000 feet up."

The eggs sent me by Captain Marshall are barely, if at all, separable from those of *Heterura sylvana.* I have a great number of the eggs of this latter species, many taken with my own hands, so that there can be no doubt, I think, as to the authenticity of these. Captain Marshall again has taken numerous nests of the present species, and he is equally certain of the authenticity of his eggs; either one or other of us is wrong, or it is a fact (which is hardly credible) that the eggs of *Heterura sylvana* and *Agrodroma Jerdoni (A. sordida Rüppell, apud Jerdon)* are inseparable!

The eggs sent by Captain Marshall are moderately broad, fairly regular, ovals, somewhat compressed or pointed towards one end; the shells are compact and fine, but almost entirely devoid of gloss. The ground colour is a brownish or greyish white, and they are profusely speckled, spotted, and streaked, and in places blotched and clouded, with a sort of sienna brown and a pale dingy half washed out colour which varies from pale sepia to pale inky purple. The markings are everywhere thickly set, but they are much most dense towards the large end, where they very generally form a more or less confluent cap. Some of the eggs have all the markings somewhat purple, and others have them browner. In length these eggs vary from 0·82 to 0·87, and in breadth from 0·62 to 0·65.

605.—*Anthus rosaceus, Hodgs.*

My friend Mr. R. Thompson sent two men, one an experienced shikaree, and the other a stuffer, into Upper Gurhwal to procure birds and eggs for me, especially those of the larger Pheasants. The men returned with numerous skins, but without a single egg of the species they had been directed to search for. They brought with them, however, two nests of eggs which they had found on the ground, along with a skin of one of the parent birds belonging to each nest. The skin pertaining to the one nest was that of *Agrodroma Jerdoni;* the other was that of *Anthus rosaceus.* The men had never been instructed to search for eggs of this kind; they had no earthly object in deceiving; the birds are both very common in the interior where they were, and the shikaree was not likely to have been himself deceived as to the bird really belonging to the eggs he brought. There was, therefore, a pretty fair presumption that the eggs were what they purported to be, but for all that it is pretty certain *from Captain Marshall's* experience that their pretended eggs of *A. Jerdoni* did not pertain to that species, and it may, therefore, well be doubted whether the eggs they produced as those of Hodgson's Pipit can be at all relied on. Future investigations must decide this point.

The eggs are moderately broad ovals, scarcely pointed at all towards the small end, but greatly resembling in shape, (though somewhat larger,) and in the character of their markings those of *Corydalla rufula.* The ground colour is a ruddy cream, and they are very thickly streaked and clouded and streakily spotted with red and purplish-red. Strange to say, though the character of the markings is very different, the colours recall those of some varieties of our Bulbul's, and they have not the peculiar old mahogany wood brown observed in the eggs of the representative *A. rufigularis.* They have like those of *C. rufula* a faint gloss.

They measure 0·8 and 0·82 by 0·65. They were obtained on the 27th May in Upper Gurhwal, at an elevation over 12,000 feet. The nest was found on the ground in a small depression and under the shelter of a tuft of grass. It *seemed* to have been a flat saucer some 4 inches in diameter, and was composed entirely of dry grass.

606.—*Heterura sylvana, Hodgs.*

The Upland Pipit breeds throughout the middle ranges of the Himalayas, east of the Beas, at elevations of from 4,000 to 7,000 or 8,000 feet. Westward of the Beas, I dare say, it may also breed, but I have no record of the fact. I have myself found the nests in Koolloo, in the Sutlej Valley, at Simla on Jacko itself, and near Mussoorie. In Kumaon I found young ones just able to fly, and Mr. Hodgson obtained the eggs in Nepal.

The breeding season lasts from April to July, but the majority of the birds lay in the neighbourhood of Simla in the last fortnight of May and the first week in June. I have obtained young birds barely able to fly in September, and either some pairs rear a second brood or else some breed very late.

All the nests that I have seen have been composed entirely of soft grass, rounded into a more or less shallow, saucer-like shape; in some cases too loosely put together to bear removal, in others tolerably compactly interwoven. I think the nests average nearly 5 inches in diameter, and scarcely more than an inch in thickness.

They are always placed on a hill side—an open more or less grassy slope—under some overhanging tuft of grass or projecting rock, and as a rule pretty well screened from view.

The female, I think, alone sits. The male, however, is always at hand, uttering from time to time a single whistling note, followed by a single clacking note, often repeated, sometimes on the ground and sometimes as he descends, after a short flight, with open wings, like the Tit-lark at home.

Four is the usual complement of eggs, but I have found five.

I again notice the fact that the numerous eggs of this species which I possess and have seen, many of them taken by myself, are, as far as I can judge, absolutely undistinguishable from the eggs sent me by Captain C. H. T. Marshall as those of *Agrodroma Jerdoni.* I feel disturbed about this. I cannot see *how* I can have made any mistake. There were a pair bred on Jacko, whom I watched building their nest, and then watched the eggs laid one a day till there were four. The birds cannot be confounded. It is almost impossible that these widely different birds should lay precisely similar eggs. Yet Captain Marshall is certain of those he obtained.

Mr. Hodgson notes that he took a nest of this species in the valley of Nepal on the 4th May. The nest was on the ground, on a slope shaded by a tuft of grass, and overhung by a large clod of earth; it was a shallow cup, some 6 inches in diameter and 2 in height, loosely made of fine dry grass and devoid of lining, and contained four eggs, figured as *precisely* similar to those which I have taken.

The eggs are oval; some narrow and elongated, and others moderately broad or even slightly pyriform; the ground is white or slightly greyish-white, and they are very thickly spotted and speckled all over, in some with reddish in others with purplish, brown and with pale inky purple. In some the markings are all very minute, speckly, and streaky; in others they are somewhat bolder and more spotty. Looked closely into in a good light, the tone of the marking varies a good deal, but not so much as do the eggs of our European *Anthus plumatus*. These eggs are almost entirely devoid of gloss.

I should add that in some eggs a ruddy purple tinge pervades all the markings, while in others the general tint is browner or greyer.

In length they vary from 0·82 to 0·98, and in breadth from 0·63 to 0·72; but the average of twenty-seven eggs is nearly 0·9 by 0·68.

607.—*Cochoa purpurea*, *Hodgs.*

We have no very certain record of the nidification of the Purple Titthrush; it is no doubt not uncommon in Kumaon, indeed is common about Binsur, and there the late Mr. Horne, C. S., took a nest probably of this species. I do not myself feel certain about the matter. Mr. Horne was no ornithologist, and but little of an oologist; but Mr. Brooks was, I think, satisfied, and I quote what he wrote to me at the time:—

"The egg of *Cochoa purpurea* in colouring *exactly* resembles that of *Merula boulboul*, but is rather smaller, being 1·2 by 0·88. Horne thought the bird was the female of *Orocetes erythrogaster*, but I have the female shot off the nest, and the nest, too, differs in mode of lining from that of *M. boulboul*." I transcribe Horne's note about it:—

"Nest very solid, of moss, built on a horizontal bough, 10 or 12 feet from the ground, in a small tree in a ravine near the top of Binsur. Interior nearly a true cup lined with white lichens, fine moss, and principally black roots (very fine). The bird sits very close, but only laid one egg in nine days. I *sent* for the nest thinking there would have been four eggs, one having been in the nest when I found it nine days since, but there were only two. The eggs very nearly resemble those of *Merula boulboul*, being however a little smaller: ground greenish, thickly blotched with brown. They vary very much in proportion of colour."

"The only question is this—Was Horne close enough to know the bird again when shot? He was close to it, and at 40 yards the bird could not be mistaken for any other: it is so well marked—the grey blue head makes such a contrast with the brown body. He *sent* for the nest and his man shot the bird therefrom; if he missed the *Cochoa* he might have contented himself with a female *Merula boulboul* (although to find a female *M. boulboul* when wanted would not be easy, for they are nearly as scarce as the *Cochoa* there), but he brought a *Cochoa*; the *nest*, morever, was *not* that of *M. boulboul*."

I venture to submit that perhaps he missed the *boulboul*, and then meeting a *Cochoa* shot it as about the right size of bird.

608.—*Cochoa viridis, Hodgs.*

Of the nidification of the Green Tit-thrush I possess no very certain information, but what I have certainly tends to corroborate Mr. Horne's account of the nidification of the Purple Tit-thrush.

A nest said to belong to the present species was sent me from Native Sikhim, where it was found in June. It was found at an elevation of about 10,000 feet, and was placed on the branch of a large tree at about 8 feet from the ground. It contained three partially incubated eggs, two of which were accidentally broken. The nest was a large Thrush-like nest, but, only the lining was sent to me, which consisted of a thick exterior coating of roots, and an interior one of the feathery, grey, beard-like lichen so commonly seen hanging from the branches of trees in the hills.

The egg is a very regular, moderately elongated, oval; the shell fine and with a fair amount of gloss.

The ground colour a very pale, somewhat greyish, green, everywhere thickly, but very finely, freckled and mottled with dull, rather pale, brownish and purplish, red. The markings are most dense at the large end, where they form an inconspicuous, irregular, speckly, or frecked cap.

The egg is very meruline in its character, and measures 1·03 in length by 0·75 in width.

609.—*Pteruthius erythropterus, Vig.*

Writing from Murree, Captain C. H. T. Marshall says: "There is no record about the nidification of this species. Its nest is exceedingly difficult to find, and it was only by long and careful watching through field glasses that Captain Cock discovered that there was a nest at the top of a very high Chestnut tree, to and from which the birds kept flying with building materials in their beaks. The nest is most skilfully concealed, being at the top of the tree, with bunches of leaves both above and below. The nest, like that of the Oriole, is built pendant in a fork. It is somewhat roughly made of moss and hair. The eggs are pinky white, blotched with red, forming in some a ring round the larger end. They average ·9 in length and ·65 in breadth. We were fortunate enough to secure two nests; both were more than 60 feet from the ground. Breeds in the end of May, at an elevation of 7,000 feet."

Captain Cock says: "I first found this bird building its nest on the top of a high Chestnut tree at Murree in the month of May. When the nest was ready I took my friend Captain C. H. T. Marshall to be present at the taking of it, as it had never, I think, been taken before. We took the nest on the 30th May.

"It was an open flatish cup, like the nest of *O. kundoo* in structure, only shallower. It contained three eggs, pinky white, covered with a shower of claret spots that at the larger end formed a cap of dark claret colour. Another nest, which I took in June from the top of an Oak, contained two eggs."

To Captains Marshall and Cock I am indebted for a nest and egg of this species.

The nest is a moderately deep cup, suspended between two prongs of a horizontal fork. Externally it is about 4 inches in diameter and about 3 inches in depth. The egg cavity is nearly hemispherical, 3 inches in diameter and 1·5 in depth. It is a very loosely made structure, composed internally of not very fine roots and externally coated with green moss. Along the lines of suspension a good deal of wool is incorporated in the structure, and it is chiefly by this wool that the nest is suspended. The fork is a slender one, the prongs being from 0·3 to 0·4 in diameter.

The egg is a broad oval, a good deal pointed towards the small end. The shell is very fine and compact, and has a fine gloss. The ground colour is white or pinky white, and is pretty thickly speckled and finely spotted all over with brownish-red and a little pale inky purple. Just towards the large end the markings are very dense, and form more or less of a confluent cap of mingled brownish-red and pale lilac, the latter everywhere appearing to underlie the former.

The egg was taken on the 10th June, and measures 0·9 by 0·68.

611.—*Allotrius melanotis, Hodgs.*

According to Mr. Hodgson's notes and figures, the Chestnut-throated Shrike-tit breeds in Sikhim and Nepal up to an elevation of 6,000 or 7,000 feet. The nest is placed at a height of 6 to 10 feet from the ground, between some slender, leafy, horizontal fork, between which it is suspended like that of an Oriole or *Zosterops.* It is composed of moss and moss roots and vegetable fibres, beautifully and compactly woven into a shallow cup some 4 inches in diameter, and with a cavity some 2·5 in diameter and less than one in depth. Interiorly the nest is lined with hair-like fibres and moss roots; exteriorly it is adorned with pieces of lichen. The eggs are two or three in number, very regular ovals, about 0·77 in length by 0·49 in width. The ground colour is a delicate pinky lilac, and they are speckled and spotted with violet or violet purple, the markings being most numerous towards the large end, where they have a tendency to form a mottled zone.

614.—*Leiothrix callipyga, Hodgs.*

The Red-billed Hill-tit breeds from April to August, at elevations of from 3,000 to 6,000 feet, throughout the Himalayas south, as a rule, of the first snowy range and eastward of the Sutlej; west of the Sutlej I have not heard of its occurrence. It also doubtless breeds throughout the hill ranges running down from Assam to Burmah. Mr. Gray, I may note, considers our Indian bird distinct from the Chinese *luteus.*

Mostly the birds lay in May, affecting well watered and jungle-clad valleys and ravines. They place their nests in thick bushes, at heights of from 2 to 8 feet from the ground, and either wedge them into some fork, tack them into three or four upright shoots between which they hang, or else suspend them like an Oriole's or *Zosterops'* nest.

The nest varies from a rather shallow to a very deep cup, and is composed of dry leaves, moss, and lichen in varying proportions, Bamboo leaves being great favourites, bound together with slender creepers, grass-roots, fibres, &c.,

and lined with black horse or buffaloe hair, or hair-like moss-roots. The nests differ much in appearance: I have seen one composed almost entirely of moss, and another of nothing but dry bamboo sheaths, with a scrap or two of moss. They are always pretty substantial, but sometimes they are very massive for the size of the bird.

Three is certainly the usual complement of eggs.

According to Mr. Hodgson's notes, this species breeds in the central mountainous region of Nepal, and lays from April to August. The nest, which is somewhat purse-shaped, is placed in some upright fork between three or four slender branches, to all of which it is more or less attached. It is composed of moss, dry leaves, often of the Bamboo, and the bark of trees, and is compactly bound together with moss-roots and fibres of different kinds; it is lined with horse hair and moss-roots, and contains generally three or four eggs.

The following note I quote *verbatim*:—

"*Central Hills, August 12th*.—Male, female, and nest. Nest in a low leafy tree 5 cubits from the ground in the Shewpoori forest; partly suspended and partly rested on the fork of the branch; suspension effected by twisting part of the material round the prongs of the fork; made of moss and lichens and dry leaves, well compacted into a deep saucer-shaped cavity; 3·62 high, 4·5 wide outside, and inside 2·25 deep and 3 inches wide; eggs pale verditer, spotted brown, and ready for hatching. The bird found in small flocks of ten to twelve, except at breeding season."

A nest sent to me last year by Mr. Gammie was found by him on the 24th April, at an elevation of about 5,000 feet, in the neighbourhood of Rungbee. It was built by the side of a stream in a small bush, at a height of about 3 feet from the ground, and contained three eggs. The nest is a deep and, for the size of the bird, very massive cup, exteriorly composed entirely of broad flag-like grass leaves, with which, however, a few slender stems of creepers are intermingled, internally with grass-roots, the egg cavity being thinly lined with coarse, black, buffalo hair. Externally the nest is more than 5 inches in diameter and nearly 4 inches high, but the egg cavity, which is very regularly shaped, is 2½ inches in diameter and 2 inches in depth.

This year Mr. Gammie writes to me: "I have taken many nests of the Red-billed Hill-tit here in our Chinchona reserves, at all elevations from 3,500 to 5,000 feet. They breed in May and June, amongst dense scrub, placing their nest in shrubs, at heights of from 3 to 5 feet from the ground, and either suspending them from horizontal branches, or hanging them between several upright stems, to which they firmly attach them. The nest itself is cup-shaped and composed principally of dry Bamboo leaves held together by a few fibres and a few strings of green moss wound round the outside. The lining consists of a few black hairs, and the usual number of the eggs is three. A nest I recently measured was externally 4 inches in diameter and 2·7 in height, while the cavity was 2·6 across by 1·9 in depth."

Dr. Jerdon says that at Darjeeling he "got the nest and eggs repeatedly; the nest made chiefly of grass, with roots, and fibres, and fragments of moss, and usually containing three or four eggs, bluish-white, with a few purple and red blotches. It is generally placed in a leafy bush at no great height from the ground. Gould, quoting from Mr. Shore's notes, says that the eggs are black spotted with yellow: this is of course erroneous. I have taken the nest myself on several occasions, and killed the bird, and in every case the eggs were coloured as above."

I wish to add here, as I have abused him occasionally, that Mr. Shore was, I understand, a most excellent man, and that I have now come to the conclusion that the extraordinary fictions that he recorded about the eggs of birds can only have been due to colour-blindness of a peculiarly aggravated nature. It is not that he mistook eggs, but that he describes *impossible* eggs—King-fishers' eggs variegated black and white, and here in this case black eggs spotted with yellow! Why, there *are* no such eggs in the whole world, I believe. On the other hand, his whole life proves that he could not have deliberately set to work to invent falsehoods. To return.

The eggs vary a good deal in shade and size, but are all more or less long ovals, slightly pointed towards the lesser end. The ground colour is a delicate very pale green or greenish-blue, in one, not very common type, almost pure white, and they are pretty boldly blotched or spotted and speckled as the case may be, and clouded, most thickly towards the large end, and very often almost exclusively in a zone or cap round this latter, with various shades of red or purple and brown. Some blotches in some eggs are almost carmine red, but the majority are brownish-red or reddish-brown, varying much in depth and intensity of colour. There is something Shrike-like in the markings of many eggs; and where the markings are most numerous, namely, at the large end, they are commonly intermingled with streaks and clouds of pale lilac. The smaller end of the egg is often entirely free from markings. I should mention that all the eggs have a faint gloss, and that some are decidedly glossy.

They vary in length from 0·81 to 0·95, and in breadth from 0·6 to 0·66; but the average of twenty eggs is 0·85 by 0·62.

615.—*Mesia argentauris, Hodgs.*

According to Mr. Hodgson's notes, the Silver-eared Hill-tit breeds in the low lands of Nepal, laying in May and June. The nest is placed upon a bushy tree, between two or three thin twigs, to which it is attached. It is composed of dry Bamboo and other leaves, thin grass-roots and moss, and is lined inside with fine roots. Three or four eggs are laid: one of these is figured as a broad oval, much pointed towards one end, measuring 0·8 by 0·6, having a pale green ground with a few brownish-red specks, and a close circle of spots of the same colour round the large end.

Dr. Jerdon brought me two eggs from Darjeeling, which he believed to belong to this species. They much resemble those of *Leiothrix callipyga*. They are oval, scarcely pointed at all towards the lesser end, and are faintly glossed. The ground colour of one is greenish-, the other creamy-, white, and both are spotted and streaked, chiefly in an irregular zone near the large end, with different shades of red and purple. The markings are smaller than those of the preceding species. Further observations are necessary to confirm the authenticity of the eggs.

They measure 0·85 and 0·87 by 0·65.

616.—*Siva strigula, Hodgs.*

The nest of the Stripe-throated Hill-tit is placed, according to Mr. Hodgson, in the slender fork of a tree at no great elevation from the ground.

It is composed of moss and moss-roots, intermingled with dry Bamboo leaves and woven into a broad compact cup-shaped nest. One such nest, taken on the 27th May with three eggs in it, measured exteriorly 4·25 in diameter and 3 inches in height, with a cavity (thickly lined with cow's hair) about 2·5 in diameter and two 2·25 in depth. The birds lay in May and June. The eggs are three or sometimes four in number; they are pale greenish-blue or bluish-green, and vary in length from 0·8 to 0·9 and in breadth from 0·6 to 0·65, and are some thickly, some thinly, speckled and freckled, usually most densely towards the large end, with red or brownish-red. His nests were taken both in Sikhim and Nepal.

617.—*Siva cyanouroptera, Hodgs.*

The Blue-winged Hill-tit breeds, according to Mr. Hodgson's notes, in the central regions of Nepal and in the neighbourhood of Darjeeling, in May and June. The nest is placed in trees, at no great elevation above the ground, and is wedged in where three or four slender twigs make a convenient fork. A nest taken on the 2nd June was a large compact cup, measuring exteriorly 4·75 in diameter and 3·75 in height, and having a cavity 2·6 in diameter and 1·87 in depth. It was composed of fine stems of grass, dry leaves, moss, and moss-roots, bound together with pieces of creepers, roots, and vegetable fibres, and closely lined with fine grass-roots. They lay from three to four eggs, which are figured as moderately broad ovals, considerably pointed towards the small end, 0·85 in length by 0·6 in width, having a pale greenish ground pretty thickly speckled and spotted, especially on the broader half of the egg, with a kind of brownish-brick-red.

618.—*Minla ignotincta, Hodgs.*

The Red-tailed Hill-tit, according to Mr. Hodgson's notes and figures, breeds in the central region of Nepal and near Darjeeling, during May and June. It builds a beautiful rather deep cup-shaped nest of mosses, moss-roots, and some cow's hair, lined with these two latter. The nest is placed in the fork of three or four slender branches of some bushy tree, at no great elevation from the ground, and is attached to one or more of the stems in which it is placed by bands of moss and fibres. A nest taken on the 24th May measured externally 3·28 in diameter and 2·25 in height; internally the cavity was 2 inches in diameter and 1·62 in depth. They lay from two to four eggs, a pale verditer blue ground, speckled and spotted pretty boldly with brownish-red. An egg is figured as a regular rather broad oval, measuring 0·78 by 0·55.

On the other hand, Dr. Jerdon says: "Its nest has been brought to me, of ordinary shape, made of moss and grass, and with four white eggs, with a few rusty red spots."

619.—*Minla castaneiceps, Hodgs.*

Mr. Hodgson's notes inform us that the Chestnut-headed Hill-tit breeds in the neighbourhood of Darjeeling in May and June, laying four eggs, which are figured as somewhat elongated ovals, having a very pale greenish-yellow or dingy yellowish-white ground finely speckled, chiefly at the large end, where there is a tendency to form a zone, with red or brownish-red, and measuring 0·75 by 0·52. The nest is said to be placed in a thick bush, at a height of about 3 feet from the ground, in a double fork; to be very broad and shallow, composed of twigs, grass, and moss, and lined with leaves. One, taken on the 18th May 1846, measured 6 inches in diameter and 2·5 in height externally; the cavity was only 2·1 in diameter and 1·0 in depth.

621.—*Proparus chrysæus, Hodgs.*

The Golden-breasted Hill-tit breeds, according to Mr. Hodgson's notes, near Darjeeling and in the central region of Nepal. They lay from three to four eggs, which are figured as somewhat broad ovals, measuring 0·7 by 0·5, with a pinky white ground, speckled and spotted thinly, except towards the large end, where there is a tendency to form a cap or zone, with brownish-red. The nest is oval or rather egg-shaped, and fixed with its longer diameter perpendicular to the ground in a Bamboo clump between a dozen or so of the small lateral shoots, at an elevation of only a few feet from the ground. One, taken near Darjeeling on the 12th June, measured externally 6 inches in height, 4·5 in breadth, and 3 inches in depth, and on one side it had an oval aperture 2·5 in height and 1·75 in breadth. It appeared to have been entirely composed of dry Bamboo leaves and broad blades of grass loosely interwoven, and with a little grass and moss-roots as lining.

Hodgson originally named this bird *chrysotis*, but as the bird has *silvery* ears Hodgson himself rejected this name and adopted the one given above. Mr. Gray, however, retains the name *chrysotis*. Now, I think a man has a perfect right to change his *own* name; what I object to is other people presuming to do it for him.

622.—*Proparus vinipectus, Hodgs.*

The Plain-brown Hill-tit is not uncommon in the higher wooded hills between Simla and Kotegurh, and from somewhere near Mutiana Captain Blair sent me a nest and egg, together with one of the old birds which had been caught on the nest.

This latter was a rather compact, massive cup, composed of moderately fine blades of grass, measuring externally about 4¼ inches in diameter and standing about 2¼ inches high. The egg cavity, about 2 inches in diameter and rather more than half an inch deep, was lined with fine blackish-brown grass-roots. Neither nest nor egg is exactly what I should have expected to pertain to this species, but Captain Blair was certain that they belonged to the parent bird which he sent with them, and I therefore describe both with entire confidence in their authenticity.

The egg is a moderately elongated oval, slightly compressed towards one end; it has a pale green ground, and near the large end has a strongly marked but very irregular sepia brown zone, and pale stains of the same colour here and there running down the egg from the zone, as well as a few isolated dark spots of the same tint. Although much smaller, and although the colour of the marking is very different, the ground colour and the character of the markings much recall those of *Leiothrix callipyga.* The egg has little or no gloss, and measures 0·73 by 0·55.

623.—*Ixulus flavicollis, Hodgs.*

I have never taken a nest of the Yellow-naped Ixulus.

Mr. Gammie says: "I have only as yet found a single nest of this species, and this was one of the most artfully concealed that I have ever seen. I found it in forest in the Chinchona reserves, at an elevation of about 5,000 feet, on the 14th May. It was a rather deep cup, composed of moss and fine root fibres and thickly lined with the latter, and was suspended at a height of about 6 feet amongst the natural moss, hanging from a horizontal branch of a small tree, in which it was entirely enveloped. A more beautiful or more completely invisible a nest it is impossible to conceive. It contained three fresh eggs. The cup itself was exteriorly 3·7 in diameter and 1·9 in depth, while the cavity was 2·5 in diameter and 1·5 in depth."

The Yellow-naped Ixulus breeds, according to Mr. Hodgson's notes, in the central region of Nepal and the neighbourhood of Darjeeling, laying during the months of May and June. It builds on the ground in tufts of grass, constructing its nest of moss and moss-roots, sometimes open and cup-like and sometimes globular, and lining it with sheep's wool. Mr. Hodgson figures one nest suspended from a branch, and although neither the English nor the Vernacular notes confirm this, it is supported to a certain extent by Mr. Gammie's experience. At the same time, though the situation and surroundings of both seem to have been similar, Mr. Hodgson figures his nest, not cup-shaped, but egg-shaped, and with the longer diameter horizontal. Seven nests are recorded as having been taken, and all on the ground. One, a cup-shaped taken on the 7th June 1846, which is also figured, in amongst grass and leaves on the ground, measured externally 3·5 in diameter, 2·5 in height, and internally 2 inches both in diameter and depth.

The full complement of eggs is said to be four. Two types of eggs are figured, both rather broad ovals, measuring about 0·75 by 0·6.—the one has a buffy white ground and is thinly speckled and streaked, except quite at the broad end, where the markings are nearly confluent, with pale dingy yellowish-brown; the other has a pale earthy brown ground, and is spotted similarly to the one just described, but with red and purple. This latter egg appears on the same plate with the suspended nest, and is I think doubtful.

Several nests of this species, which I owe to Captain Masson of Darjeeling, are very beautiful structures, moderately shallow and rather massive cups, externally composed of moss, and lined thickly with fine black moss-roots. The cavity of the nests may have been about 1¾ inch in diameter by less than 1½ inch in depth, but the sides of the nests are from an inch to 2 inches in thickness of firmly compacted moss.

Dr. Jerdon tells us that at Darjeeling he has repeatedly had the nest brought to him. "It is large, made of leaves of Bamboos carelessly and loosely put together, and generally placed in a clump of Bamboos. The eggs are three to five in number, of a somewhat fleshy-white, with a few rusty spots."

I cannot but think that in this case wrong nests had been brought to Dr. Jerdon. The eggs that I possess are all of one type—rather elongated ovals with scarcely any gloss, and strongly recalling in shape, size, and appearance densely marked varieties of the eggs of *Hirundo rustica,* but with the markings rather browner and slightly more smudgy.

The ground colour is white, with perhaps a slightly yellowish tinge, and doubtless when unblown (for the shell is very fine and delicate) more or less salmon coloured; and they are profusely blotched, streaked, freckled, and spotted (by far most densely at the large end, where they form a more or less confluent, irregular mottled, cap or zone) with two shades of dull, but not dark, brown—the one reddish the other yellowish. The markings have decidedly a streaky and ill defined character, and of course they vary in intensity, some being moderately dark, others quite pale and washed out in appearance.

The eggs I have only vary from 0·78 to 0·8 in length, and from 0·54 to 0·56 in breadth.

624.—*Ixulus occipitalis, Hodgs.*

A nest of this species, taken by Mr. Gammie out of a small tree below Rungbee, at an elevation of about 3,000 feet, was a small, somewhat shallow, cup, composed almost entirely of very fine moss-roots, but with a little moss incorporated in the outer surface. Externally the nest was about 3½ inches in diameter and 2 inches in height. The egg cavity was about 2¼ inches by barely 1¼ inch. This nest was found on the 17th June and contained three hard-set eggs, *which* were thrown away!

626.—*Yuhina gularis, Hodgs.*

The Striped-throated Yuhina breeds, according to Mr. Hodgson's notes, from April to July, building a large massive nest of moss, lined with moss-roots, and wedged into a fork of a branch or between ledges of rocks, more or less globular in shape, and with a circular aperture near the top towards one side. A nest taken on the 19th June, near Darjeeling, was quite egg-shaped, the long diameter being perpendicular to the ground, and measured 6 inches in height and 4 inches in breadth, the aperture, 2 inches in diameter, being well above the middle of the nest; the cavity was lined with fine moss-roots. The eggs are figured as rather elongated ovals, 0·8 by 0·56, with a pale buffy or *cafè au lait* ground colour, thickly spotted with red or brownish-red, the markings forming a confluent zone about the large end.

628.—*Yuhina nigrimentum, Hodgs.*

A nest of the Black-chinned Yuhina, taken by Mr. Gammie on the 17th June below Rungbee, at an elevation of about 3,500 feet, was placed in a large tree, at a height of about 10 feet from the ground, and contained four hard-set eggs. It is a mere pad, below of moss, mingled with a little wool and moss-roots, and above, that is to say, the surface where the eggs repose, of excessively fine grass-roots.

Dr. Jerdon says: "A nest was once brought me which was declared to belong to this species; it was a very small neat fabric, of ordinary shape, made with moss and grass, and contained three small pure white eggs. The rarity of the bird makes me doubt if the nest really belonged to it."

The eggs are tiny little elongated ovals, pure white, and absolutely glossless. Two sent me by Mr. Gammie measure 0·58 by 0·42 and 0·57 by 0·43.

629.—*Myzornis pyrrhoura, Hodg.*

I have received a single egg said to belong to the Fire-tailed Flower-pecker from Native Sikhim, where it was found in May in a small nest (unfortunately mislaid) which was placed on a branch of a large tree at no great height from the ground. The place where it was found had an elevation of about 10,000 feet. Although the parent bird was sent with the egg, I cannot say that I have any great confidence in its authenticity, and only record the matter *quantum valeat.*

The egg is a very regular, rather elongated, oval. The egg was never properly blown and has been consequently somewhat discoloured. It may have been pure white, and it may have been fairly glossy when fresh, but it is now a dull ivory white with scarcely any gloss. It measured 0·68 in length by 0·5 in breadth.

631.—*Zosterops palpebrosa, Tem.*

The Indian White-eyed Tit breeds almost throughout the Indian Empire, sparingly in the hotter and more arid plains, abundantly in the Nilghiris and other ranges of the Peninsula to their very summits, and in the Himalayas to an elevation of 5,000 or 6,000 feet.

The breeding season extends in different localities from January to September, but I think that everywhere April is the month in which most eggs are to be met with.

Sometimes they have two broods; whether this is always the case I do not know.

The nest is placed almost indifferently at any elevation. I have taken one from amongst the topmost twigs of a huge Mohwa tree (*Bassia latifolia*) fully 60 feet high, and I have found them in a tiny bush not a foot off the soil. Still I think that perhaps the majority build at low elevations, say, between 2 and 6 feet from the ground.

The nest is always a soft, delicate, little cup, sometimes very shallow, sometimes very deep, as a rule suspended between two twigs like a miniature Oriole's nest, but on rare occasions propped in a fork. The nest varies much in size and in the materials with which it is composed.

Fine grass and roots, tow, and a variety of vegetable fibres, thread, floss silk, and cobwebs are all made use of to bind the little nest together and attach it to the twigs whence it depends. Grass again, moss, vegetable fibre, seed down, silk, cotton, lichen, roots, and the like are used in the body of the nest, which is lined with silky down, hair, moss, and Fern roots, or even silk, while at times tiny silvery cocoons or scraps of rich coloured lichen are affixed as ornaments to the exterior.

One nest before me is a very perfect and deep cup, hung between two twigs of a Mohwa tree and almost entirely hidden by the surrounding leaves. The exterior diameter of the nest is 2½ inches, and the depth 2 inches. The egg cavity measures scarcely more than 1½ inch across and very nearly as much in depth. It is composed of very fine grass stems and is thinly coated exteriorly with cobwebs, by which also it is firmly secured to the suspending twigs, and externally numerous small cocoons and sundry pieces of vegetable down are plastered on to the nest. Another nest hung between two slender twigs of a Mango tree is a shallow cup some 2½ inches in diameter and not above an inch in depth externally. The egg cavity measures at most 1½ inch across by three-fourths of an inch in depth. The nest is composed of fine tow-like vegetable fibres and thread, by which it is attached to the twigs, a little grass down being blended in the mass, and the cavity being very sparsely lined with very fine grass stems. In another nest, somewhat larger than the last described, the nest is made of moss slightly tacked together with cobwebs and lined with fine grass fibres. Another nest, a very regular shallow cup, with an egg cavity 2 inches in diameter and an inch in depth, is composed almost entirely of the soft silky down of the *Calatropis gigantea*, rather thickly lined with very fine hair-like grass, and very thinly coated exteriorly with a little of this same grass, moss, and thread. Another, with a similar sized cavity, but nearly three-fourths of an inch thick everywhere, is externally a mass of moss, moss-roots, and very fine lichen, and is lined entirely with very soft and brilliantly white satin-like vegetable down. Another, with about the same sized cavity, but the walls of which are scarcely one-fourth of an inch in thickness, is composed *entirely* of this satiny down, thinly coated exteriorly and interiorly with excessively fine moss-roots (roots so fine that most of them are much thinner than human hair); a few black horse-hairs, which look coarse and thick beside the other materials of the nest, are twisted round and round in the interior of the egg cavity. Other nests might be made entirely of tow, so far as their appearance goes, and in fact with a very large series before me, no two seem to be constructed of the same materials.

I have nests before me now taken in September, March, June, and August, all of which when found contained eggs.

Two is certainly the normal number of the eggs; about one-fifth of the nests I have seen contained three, and once only I found four.

From Murree Captain Marshall informs us that he took the eggs in June at an elevation of about 6,000 feet.

Captain Hutton gives a very full account of the nidification of this species. He says: "These beautiful little birds are exceedingly common at Mussoorie, at an elevation of about 5,000 feet, during summer, but I never saw them much higher. They arrive from the plains about the middle of April, on the 17th of which month I saw a pair commence building in a thick bush of *Hibiscus*, and on the 27th of the same month the nest contained three small eggs hard-set. I subsequently took a second from a similar bush, and several from the drooping branches of Oak trees to the twigs of which they were fastened. It is not placed on a branch, but is suspended between two thin twigs to which it is fastened by floss silk torn from the cocoons of *Bombyx Huttoni*, Westw., and by a few slender fibres of the bark of trees or hair according to circumstances.

"So slight and so fragile is the little oval cup that it is astonishing the mere weight of the parent bird does not bring it to the ground, and yet within it three young ones will often safely outride a gale that will bring the weightier nests of Jays and Thrushes to the ground.

"Of seven nests now before me four are composed externally of little bits of green moss, cotton, and seed down, and the silk of the wild Mulberry moth torn from the cocoons, with which last material, however, the others appear to be bound together within. The lining of two is of the long hairs of the yak's tail, two of which died on the estate where these nests were found, and a third is lined with black human hair. The other three are formed of somewhat different materials, two being externally composed of fine grass stalks, seed down, and shreds of bark so fine as to resemble tow; one is lined with seed down and black fibrous lichens resembling hair, a second is lined with fine grass, and a third with a thick coating of pure white silky seed down. In all the seven, the materials of the two sides are wound round the twigs between which they are suspended like a cradle, and the shape is an ovate cup, about the size of half a hen's egg split longitudinally. The diameter and depth are respectively 2 inches and 1½ inch by three-fourths of an inch. The eggs are usually three in number."

Mr. Brooks, writing from Almorah, says: "This morning, 28th April, I found a nest of *Zosterops palpebrosa* containing two fresh eggs. Yesterday I found one of the same bird containing three half-fledged young ones. Near the Tonse River, in the Allahabad District, I found these birds in July nesting high in a Mango tree, and suspended like an Oriole's to several leaves; now I find it in low bushes, at heights of from 3 to 5 feet from the ground. The eggs as before skim-milk blue, without any markings of any kind."

From Gurhwal Mr. R. Thompson says: "A small cup-shaped elegant nest is built by this bird suspended by fastenings from the fork of a low branch. The nest is about 2½ inches in diameter and three-fourths of an inch in depth, composed of cobwebs, fine roots, hairs, &c., neatly interwoven and lined internally with vegetable down. The eggs, two, three, or four in number, are of a pale whitish-blue, oval, and somewhat larger than those of *Arachnechthra asiatica.* The birds select all kinds of trees, but the nest in always suspended. The breeding season is about March and April, and the brood is quickly hatched and fledged.

"A nest found by me on the 22nd April, and containing four eggs, was built most ingeniously in a creeper that hung from a small tree. The birds had arranged it so that the long down bearing tendril of the creeper blended with the nest, which in main was composed of the material surrounding it.

"Another nest found on the 26th contained three young ones. It was built in a low branch of a large Mango tree, and might have been 12 feet from the ground. It was a neat compact structure, deeply hollow and made up of cobwebs, fine straw, and hair, and lined with vegetable down closely and neatly interwoven.

"The parent birds were evidently feeding the young on the ripe fruit of the *Khoda* or *Chumroor* (*Ehretia lævis*). I got one fruit from the old birds, being anxious to know what the young ones were getting for their dinner.

"The pairing season commences about the end of March, when the males may be heard uttering a feeble kind of rambling song, which in reality is merely modified repetitions of a single note."

Mr. A. Anderson notes that "the White-eyed Tit breeds throughout the North-Western Provinces and Oudh during the months of June, July, and August. The nest is a beautiful little model of the Oriole's; and according to my experience it is invariably *suspended* and *not fixed in the fork of small branches* as stated by Jerdon. I have on several occasions watched a pair in the act of building their nest. They set to work with cobwebs, and having first tied together two or three leafy twigs to which they intend to attach their nest, they then use fine fibre of the Sun (*Crotalaria juncea*), with which material they complete the outer fabric of their very beautiful and compact nest. As the work progresses more cobwebs and fibre of a silky kind are applied externally, and at times the nest, when tossed about by the wind (sometimes at a considerable elevation), would be mistaken by a casual observer for an accidental collection of cobwebs. The inside of the nest is well felted with the down of the Madar plant, and then it is finally lined with fine hair and grass stems of the softest kind. Sometimes the nest is suspended from only two twigs, exactly after the fashion of the Mango-birds (*Oriolus kundoo*), and in this case it is attached by means of silk-like fibres and fine fibre of *Sun* for about 1½ inch on each side; at others it is suspended from several twigs; and occasionally I have seen the leaves fixed on to the sides of the nest, thus making it extremely difficult of detection.

"In shape the nest is a perfect hollow hemisphere: one now before me measures (inside) 1·5 in diameter. The wall is about 0·3 in thickness."

"Almost all my nests have been built on the Neem tree, the long slender *petioles* of which are admirably adapted for its suspension.

"As a rule the nest is built at a considerable height, and owing to its situation there is not a more difficult nest to take. Great numbers get washed down in a half finished state in a heavy fall of rain.

"The eggs are, exactly as Jerdon describes them, of a pale blue, 'almost like skimmed milk,' and the usual number is three, though four are frequently laid."

"On the 7th September," writes Mr. R. M. Adam, "in my garden in Lucknow, I discovered a nest of this bird in course of construction, but when it was nearly finished the birds left it. The nest was a beautifull little cup made of fine grass and cobwebs. It was situated in a slender fork of a Mango tree about 15 feet from the ground."

Mr. E. Aitken writes: "I have only actually taken one nest of the White-eyed Tit. That was in Poona (2,000 feet above the sea) on the 21st July. The bird, however, builds abundantly in Poona about gardens, trees on the roadside, &c.

"This particular nest was fixed to a thin branch of a Tamarind tree on the side of a lane among gardens. It was within reach of my hand, and was attached both to the thin branch itself and to two twigs. It was well sheltered among leaves.

"The nest was a cup rather narrower at the mouth than in the middle. Its external diameter at the top was 2½ inches; internal diameter 1½ inch; depth 1½ inch internally. It was composed of a variety of fibres closely interwoven with some kind of vegetable silk, and was lined principally with horse-hair and very fine fibres."

"It contained three eggs."

Mr. Davison tells us that "the White-eyed Tit breeds on the Nilghiris in February, March, April, and the earlier part of May. The nest is a small neat cup-shaped structure suspended between a fork in some small low bush, generally only 2 or 3 feet from the ground, but sometimes high up about 20 or 30 feet from the ground. It is composed externally of moss and small roots and the down from the thistle; the egg cavity is invariably sparingly lined with hair. The eggs, two in number, are of a pale blue, like skimmed milk."

From Kotagherry Miss Cockburn remarks: "Their nests are, I think, more elegantly finished than those of any of the small birds I have seen up here.

They generally select a thick bush where, when they have chosen a horizontal forked branch, they construct a neat round nest which is left quite open at the top. The materials they commence with are green moss, lichen, and fine grass intertwined. I have even found occasionally a coarse thread, which they had picked up near some Badagar's village and used in order to fasten the little building to the branches. The inside is carefully lined with the down of seed pods. White-eyed Tits' nests are very numerous here in the months of January, February, and March. They are extremely partial to the wild Gooseberry bush as a site to build on. One year I found ten out of eleven nests on these bushes, the fruit of which is largely used by the aborigines of the hills. A pair once built on a thick Orange tree in our garden. We often stood quite close to one of them, while sitting on the eggs, and it never showed the slightest degree of fear. They lay two eggs of a light blue colour."

Mr. Wait, writing from Conoor, says that "*Z. palpebrosa* breeds in April and May, building in bushes and shrubs, and making a deep round cup-shaped nest very neatly woven in the style of the Chaf-finch, composed of moss, grass, and silk cotton, and sparsely lined with very fine grass and hair. The eggs are two in number, of a roundish oval shape, and a pale greenish-blue colour."

The eggs are somewhat lengthened ovals (occasionally rather broader), and a good deal pointed towards the small end. The shell is very fine but almost glossless; here and there a somewhat more glossy egg is met with. They are normally of an uniform very pale blue or greenish-blue, without any markings whatsoever, but once in a way an egg is seen characterised by a cap or zone of a somewhat purer and deeper blue. Abnormally large and small specimens are common. They vary in length from 0·53 to 0·7, and in breadth from 0·42 to 0·58; but the average of thirty-eight eggs is 0·62 by 0·47, and the great majority of the eggs are really about this size.

633.—*Cephalopyrus flammiceps, Burt.*

Writing from Murree Captain Marshall tells us: "On the 25th May we found the nest of this species (the Fire-cap) in a hole in a rotten Sycamore tree about 15 feet from the ground. The nest was a neatly made cup-shaped one, formed principally of fine grass. We were unfortunately too late for the eggs, as we found four nearly fledged young ones, showing that these birds lay about the 15th April. Elevation, 7,000 feet."

Captain Cock says: "I found a nest in the stump of an old Chestnut tree at Murree. The nest was about 13 feet from the ground near the top of the stump placed in a natural cavity; it was constructed of fine grass and roots carefully woven and was of a deep cup shape. It contained five fully fledged young ones. The end of May was the time when I found this, and I have never yet succeeded in finding another."

634.—*Ægithaliscus erythrocephalus, Vig.*

The Red-cap Tit breeds throughout the Himalayas from Murree to Bhootan, at elevations of from 6,000 to 9,000 or perhaps 10,000 feet.

They commence breeding very early. I have known nests to be taken quite at the beginning of March, and they continue laying till the end of May.

The nest is, I think, most commonly placed in low stunted hill Oak bushes, either suspended between several twigs, to all of which it is more or less attached, or wedged into a fork. *I have* found the nest in a Deodar tree, *laid* on an horizontal bough. I have seen them in tufts of grass, in banks and other unusual situations, but the great bulk build in low bushes, and of these the Hill Oak is, I think, their favourite.

The nests closely resemble those of the Long-tailed Tit *(Orites caudatus)*. They are large ovoidal masses of moss, lichen, and moss-roots, often tacked together a good deal outside with cotton wool, down of different descriptions, and cobwebs. They average about 4½ inches in height or length, and about 3½ inches in diameter. The aperture is on one side near the top. The egg cavity, which may average about 2¼ inches in diameter and about the same in depth below the lower edge of the aperture, is densely lined with very soft down of feathers.

They lay from six to eight eggs, but I once found only four eggs in a nest, and these fully incubated.

From Murree Captain Marshall notes that this species "builds a globular nest of moss and hair and feathers in thorny bushes. The eggs we found were pinkish-white, with a ring of obsolete brown spots at the larger end. Size, ·55 by ·43. Lays in May."

Captain Hutton tells us that the Red-cap Tit is "common at Mussoorie, and in the hills generally, throughout the year. It breeds in April and May. The situation chosen is various, as one taken in the former month at Mussoorie, at 7,000 feet elevation, was placed on the side of a bank among overhanging coarse grass, while another taken in the latter month, at 5,000 feet, was built among some Ivy twining round a tree, and at least 14 feet from the ground. The nest is in shape a round ball with a small lateral entrance, and is composed of green mosses warmly lined with feathers. The eggs are five in number, white with a pinkish tinge, and sparingly sprinkled with lilac spots or specks, and having a well defined lilac ring at the larger end."

From Nynee Tal Captain G. F. L. Marshall writes: "This species makes a beautifully neat nest of fine moss and lichens, globular, with side entrance, and thickly lined with soft feathers. A nest found on Cheena, above Nynee Tal, on the 24th May 1873, at an elevation of about 7,000 feet, was wedged into a fork at the end of a bough of a Cypress tree, about 10 feet from the ground, the entrance turned inwards towards the trunk of the tree. It contained one tiny egg, white, with a dark cloudy zone round the larger end."

These tiny eggs, almost smaller than those of any European bird that I know, are broad ovals, sometimes almost globular, but generally somewhat compressed towards one end, so as to assume something of a pyriform shape. They are almost entirely glossless, have a pinkish or at times creamy white ground, and exhibit a conspicuous reddish or purple zone towards the large end, composed of multitudes of minute spots almost confluent, and interspaced with a purplish cloud. Faint traces of similar excessively minute purple or red points extend more or less above and below the zone. The eggs vary from 0·53 to 0·58 in length, and from 0·43 to 0·46 in breadth; but the average of twenty-five is 0·56 nearly by 0·45 nearly.

638.—*Lophophanes melanolophus, Vig.*

The Crested Black-tit breeds throughout the Lower Himalayas west of Nepal, at elevations of from 6,000 to 8,000 feet.

The breeding season lasts from March to June, but the majority have laid, I think, for the first hatch by the end of the first week in April, unless the season has been a very backward one. They usually rear two broods.

They build, so far as I know, always in holes, in trees, rocks, and walls, preferentially in the latter. Their nests involve generally two different kinds of work—the working up of the true nest on which the eggs repose, and the preliminary closing in and making comfortable the cavity in which the former is placed. For this latter work they use almost exclusively moss. Sometimes very little filling in is required; sometimes the mass of moss used to level and close in an awkward shaped recess is surprisingly great. A pair breed every year in a terrace wall of my garden at Simla; elevation about 7,800 feet. One year they selected an opening a foot high and 6 inches wide, and they closed up the whole of this, leaving an entrance not 2 inches in diameter. Some years ago I disturbed them there, and found nearly half a cubic foot of dry green moss. Now they build in a cavity behind one of the stones, the entrance to which is barely an inch wide, and in this, as far as I can see, they have no moss at all.

The nests are nothing but larger or smaller pads of closely felted wool and fur; sometimes a little moss, and sometimes a little vegetable down, is mingled in the moss, but the great body of the material is always wool and fur. They vary very much in size: you may meet with them fully 5 inches in diameter and 2 inches thick, comparatively loosely and coarsely massed together; and you may meet with them shallow saucers 3 inches in diameter and barely half an inch in thickness anywhere, as closely felted as if manufactured by human agency.

Six to eight is considered the full complement of eggs, but the number is very variable, and I have taken three, four, and five well incubated eggs.

Captain Beavan, to judge from his description, seems to have found a regular cup-shaped nest such as I have never seen. He says: "At Simla, April 20th, 1866, I found a nest of this species with young ones in it in an old wall in the garden. I secured the old bird for identification, and then released her. The nest contained seven young ones, and was large in proportion. The outside and bottom consists of the softest moss, the nest being carefully built between two stones, about a foot inside the wall; the rest of it is composed of the finest grey wool or fur. Diameter inside 2·5; outside about 5 inches. Depth inside nearly 3 inches; outside 3·6."

Captain Cock tells me that he "found several nests in May and June in Cashmere. The first nest I found was in a natural cavity high up in a tree containing three eggs, which I unfortunately broke while taking them out of the nest. The interior of the cavity was thickly lined with fur from some small animal, such as a hare or rat. I found my second nest close to my tent in a cleft of a Pine, quite low down, only 3 feet from the ground. I cut it out and it contained five eggs of the usual type—broad, blunt little eggs, white, with rusty blotches."

The eggs of this species are moderately broad ovals, with a very slight gloss. The ground colour is a slightly pinkish-white, and they are richly blotched and spotted, and more or less speckled (chiefly towards the large end) with bright, somewhat brownish, red. They resemble very closely the eggs of the Crested Tit-mouse *as figured* by Mr. Hewitson.

These eggs vary much in size and in density of marking. The ordinary dimensions are about 0·61 by 0·47, but in a large series they vary in length from 0·57 to 0·72 and in breadth from 0·43 to 0·54. The very large eggs, however, indicated by these *maxima* are rare and abnormal.

644.—*Parus monticolus, Vig.*

The Mountain-tit breeds throughout the Himalayas, at elevations of from 4,000 to 7,000 or 8,000 feet.

The breeding season lasts from March to June, and some birds at any rate must have two broods, since I found three fresh eggs in the wall of the Pownda dák bungalow about the 20th June. More eggs are, however, to be got in April than in any other month.

They build in holes, in trees, bamboos, walls, and even banks, but walls receive, I think, the preference.

The nests are loose dense masses of soft downy fur or feathers, with more or less moss, according to the situation.

The eggs vary from six to eight, and I have repeatedly found seven and eight young ones; but Captain Beavan has found only five of these latter, and although I consider from six to eight the normal complement, I believe they very often fail to complete the full talé.

Captain Beavan says: "At Simla, on May 4th, 1866, I found a nest of this species in the wall of one of my servant's houses. It contained five young ones, and was composed of fine grey pushm or wool resting on an under-structure of moss."

At Murree Captain Marshall notes that this species "breeds early in May in holes, in walls, and trees, laying white eggs covered with red spots."

Speaking of a nest he took at Dhurmsala, Captain Cock says: "The nest was in a cavity of a Rhododendron tree, and was a large mass of down of some animal; it looked like rabbit's fur, which of course it was not, but it was some dark, soft, dense fur. The nest contained seven eggs, and was found on the 28th April 1869. The eggs were all fresh."

Mr. Gammie says: "I got one nest of this Tit here on the 14th May in the Chinchona reserves (Sikhim), at an elevation of about 4,500 feet. It was in partially cleared country, in a natural hole of a stump, about 5 feet from the ground. The nest was made of moss and lined with soft matted hair; but I pulled it out of the hole carelessly and cannot say whether it had originally any defined shape. It contained four hard-set eggs."

The eggs are very like those of *Parus cæsius;* but they are somewhat longer and more slender eggs, and as rule are rather more thickly and richly marked.

They are moderately broad ovals, sometimes almost perfectly symmetrical, at times slightly pointed towards one end, and almost entirely devoid of gloss. The ground is white, or occasionally a delicate pinkish-white, in some richly and profusely spotted and blotched, in others more or less thickly speckled and spotted with darker or lighter shades of blood-, brick-, slightly purplish-, or brownish-, red, as the case may be. The markings are much denser towards the large end, where in some eggs they form an imperfect and irregular cap. In size they vary from 0·68 to 0·76 in length, and from 0·49 to 0·54 in breadth; but the average of thirty-two eggs is 0·72 by 0·52 nearly.

645.—*Parus cæsius Tick.*

"The Java bird, *P. cinereus*, Vieill., writes Mr. Swinhoe, can be easily distinguished by the black of the head extending beyond the white nuchal *spot* and separating it from the grey of the back. If this view be accepted, as I believe that it must be, our Indian bird should stand under Tickell's name.

The Indian Grey-tit breeds throughout the more wooded mountains of the Indian Empire, wherever these attain an altitude of 5,000 feet, at elevations of from 4,000 or 5,000 to even (where the hills exceed this height) 9,000 feet.

In the Himalayas the breeding season extends from the end of March to the end of June, or even a little later, according to the season. They have two broods—the first clutch of eggs is generally laid in the last week of March or early in April; the second towards the end of May or during the first-half of June.

In the Nilghiris they lay from February to May, and *probably* a second time in September or October.

The nests are placed in holes in banks, in walls of buildings or of terraced fields, in out-houses of dwellings or deserted huts and houses, and in holes in trees, and very frequently in those cut in some previous year for their own nests by Barbets and Woodpeckers.

Occasionally it builds *on* a branch of a tree, and my friend Mr. E. C. Buck, c. s., found a nest containing six half-set eggs thus situated on the 19th June at Gowra. It was on a "Banj" tree 10 feet from the ground.

The only nest that I have myself seen in such a situation was a pretty large pad of soft moss, slightly saucer-shaped, about 4 inches in diameter, with a slight depression on the upper surface, which was everywhere thinly coated with sheep's wool and the fine white silky hair of some animal. The nest is usually a shapeless mass of downy fur, cattle hair, and even feathers and wool, but when on a branch is strengthened exteriorly with moss. Even when in holes, they sometimes round the nest into a more or less regular though shallow cup, and use a good deal of moss or a little grass or grass-roots; but as a rule the hairs of soft and downy fur constitute the chief material, and this is picked out by the birds, I believe, from the dung of the various cats, polecats, and ferrets so common in all our hills.

I have never found more than six eggs, and often smaller numbers, more or less incubated.

Mr. Brooks tells us that the Indian Grey-tit is "common at Almorah. In April and May I found the nest two or three times in holes in terrace walls. It was composed of grass-roots and feathers, and contained in each case nearly fully grown young, five in number."

From Dhurmsala Captain Cock writes: "*Parus cinereus* built in the walls of Dr. C's stables this year. When I found the nest it contained young ones. I watched the parents flying in and out, but to make sure put my ear to the wall and could hear the young ones chirrupping. The nest was found in the early part of May 1869."

Speaking of Southern India Mr. Davison remarks that "the Grey-tit breeds in holes either of trees or banks; when it builds in trees it very often (whenever it can apparently) takes possession of the deserted nest-hole of *Megalaima viridis*; when in banks a rat hole is not uncommonly chosen. All the nests I have ever seen or taken were composed in every single instance of fur obtained from the dried droppings of wild cats."

From Kotagherry Miss Cockburn sends the following interesting note:—

"Their nests are found in deep holes in earth banks, and sometimes in stone walls. Once a pair took possession of a bamboo in one of our thatched outhouses—the safest place they could have chosen, as no hand could get into the small hole by which they entered. These Tits show great affection and care for their young. While hatching their eggs, if a hand or stick is put into the nest they rise with enlarged throats, and, hissing like a snake, peck at it till it is withdrawn. On one occasion I told my horse-keeper to put his hand into a hole into which I had seen one of these birds enter. He did so, but soon drew it out with a scream, saying a 'snake had bit him.' I told him to try again, but with no better success; he would not attempt it the third time, so the nest was left with the bold little proprietor, who no doubt rejoiced to find she had succeeded in frightening away the unwelcome intruder. The materials used by these birds for their nests consist of soft hair, downy feathers, and moss, all of which they collect in large quantities. They build in the months of February and March; but I once found a nest of young Indian Grey-tits so late as the 10th November. They lay six eggs, white with light red spots. On one occasion I saw a nest in a bank by the side of the road; when the young were nearly fledged the road had to be widened, and workmen were employed in cutting down the bank. The poor parent birds appeared to be perfectly aware that their nest would soon be reached, and after trying in vain to persuade the young one (for there was but one) to come out, they pushed it down into the road but could get it no further, though they did their utmost to take it out of the reach of danger. I placed it among the bushes above the road, and then the parents seemed to be immediately conscious of its safety."

Mr. H. R. P. Carter notes that he "found a nest of the Grey-tit at Coonoor, on the Nilghiris, on the 15th May. It was placed in a hole in a bank by the road side. It was a flat pad, composed of the fur of the hill hare, hairs of cattle, &c., and was fluffy and without consistence. It contained three half-set eggs."

Mr. J. Darling (Junior) says: "I have found the nests at Ooty, Coonoor, Neddivattam, and Kartary, at all heights from 5,000 to nearly 8,000 feet above the sea, on various dates between 17th February and 10th May.

"It builds in banks, or holes in trees, at all heights from the ground, from 3 to 30 feet. It is fond of taking possession of the old nest holes of the Green Woodpecker. The nest is built of fur or fur and moss, and always lined with fine fur, generally that of hares. Its shape depends upon that of the hole in which it is placed, but the egg cavity or depression is about 3 inches in diameter and an inch in depth.

"It lays four, five, and sometimes six eggs, but I think more commonly only four."

Dr. Jerdon remarks: "I once found its nest in the deserted bungalow at Kallia in the corner of the house. It was made chiefly of the down of hares (*Lepus nigricollis*), mixed with feathers, and contained six eggs, white spotted with rusty red."

The eggs resemble in their general character those of many of our English Tits, and though, I think, typically slightly longer, they appear to me to be very close to those of *Parus palustris*. In shape they are a broad oval, but somewhat elongated and pointed towards the small end. The ground colour is pinkish-white, and round the large end there is a conspicuous, though irregular and imperfect, zone of red blotches, spots, and streaks. Spots and specks of the same colour, or occasionally of a pale purple, are scantily sprinkled over the rest of the surface of the egg, and are most numerous in the neighbourhood of the zone. The eggs have a faint gloss. Some eggs do not exhibit the zone above referred to, but even in these the markings are much more numerous and dense towards the large end.

In length the eggs vary from 0·65 to 0·78,[*] and in breadth from 0·5 to 0·58; but the average of thirty-eight is 0·71 by 0·54, so that they are really, as indeed they look *as a body*, a shade shorter and decidedly broader than those of *monticolus.*

647.—*Machlolophus xanthogenys, Vig.*

The Yellow-cheeked Tit is one of the commonest birds in the neighbourhood of Simla, yet curiously enough I have never found a nest.

I have had eggs and nests sent me, and I know it breeds throughout the Western Himalayas, at elevations of from 4,000 to 7,000 feet; that it lays during April and May (and probably other months), making a soft pad-like nest, composed of hair and fur, in holes in trees and walls; but I can give no further particulars.

Captain Hutton tells us that it is "common in the hills throughout the year. It breeds in April, in which month a nest containing four fledged young ones was found at 5,000 feet elevation; it was constructed of moss, hair, and feathers, and placed at the bottom of a deep hole in a stump at the foot of an Oak tree."

Writing from Dhurmsala, Captain Cock says: "Towards the end of April this bird made its nest in a hole of a tree just below the terrace of my house. Before the nest was quite finished a pair of *Passer cinnamomeus* bullied the old birds out of the place which they deserted. After they had left it, I cut the nest out and found it nearly ready to lay in, lined with soft goat hair and that same dark fur noticed in the nest of *Parus monticolus.*"

Later he wrote to me that this species "breeds up at Dhurmsala in April and May. It chooses an old cleft or natural cavity in a tree, usually the Hill Oak, and makes a nest of wool and fur at the botton of the cavity, upon which it lays five eggs much like the eggs of *Parus monticolus.* Perhaps the blotches are little larger, otherwise I can see no difference. I noticed on one occasion the male bird carry wool to the nest, which, when I cut out the same day, I found contained hard-set eggs. I used to nail a sheepskin up in a Hill Oak, and watch it with glasses, during April and May, and many a nest have I found by its help. *P. cæsius, P. monticolus, X. machlolophus, A albo-superciliaris,* and many others used to visit it and pull off flocks of wool for their nests. Following up a little bird with wool in its bill through jungle requires sharp eyes and is no easy matter at first, but one soon becomes practised at it."

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[*] I have one egg only exceeding these dimensions, and that is a monster (for the bird); it measures 0·85 in length! I did not take this egg myself, and therefore cannot feel perfectly sure of its authenticity.

The eggs are regular, somewhat elongated, ovals, in some cases slightly compressed towards one end. The ground is white or reddish-white, and they are thickly speckled, spotted, and even blotched with brick-dust red; they have little or no gloss.

They vary in length from 0·7 to 0·78, and in breadth from 0·52 to 0·55; but I have only measured six eggs.

654.—*Accentor strophiatus, Hodgs.*

The Rufous-breasted Accentor breeds, according to Mr. Hodgson, from May to August, on the high naked ranges of the Himalayas, in Sikhim, and Nepal. The nest is placed upon the ground, amongst tufts of "Sunputti" grass, and is composed of grass-roots and moss lined with sheep's wool and the hairs of yaks. The nest is a hollow cup; one measured externally 4·12 in diameter and 2·5 in height; the cavity was 2·62 in diameter and 1·5 in depth. They lay three or four eggs, regular ovals, pure, pale, spotless sky blue, measuring about 0·74 by 0·54.

654 *bis.—Accentor Jerdoni, Brooks.*

Mr. Brooks has separated this species, of which he obtained a nest and eggs on the 6th June at Sonamerg in Cashmere.

I have had no opportunity of satisfying myself that it is a good species. I give it on his authority.

He says: "Captain Cock says that *Accentor Jerdoni* is 'common at Sonamerg in Cashmere. It makes a neat cup nest in the lower boughs of some Pine tree in June, and lays four beautiful blue eggs.

"'The nest is a deep cup, constructed of grass, Pine needles and roots, and is placed on the upper surface of one of the lower boughs of the Pine. The eggs are rather long ovals and sky blue.'"

The eggs are very regular, somewhat elongated, ovals, some only slightly pointed towards the lesser end, others a good deal compressed there.

They are of a rather more elongated form than those of *Accentor modularis*, but are of similar shape to the figure of *Accentor alpinus* in Hewitson's work; the texture is smooth. The egg is without spots and of a pure bluish-green, the same tint as is exhibited in the illustration of the Accentor's eggs in the above work. There is no gloss upon the egg.

Four eggs varied from 0·74 to 0·77 in length, and from 0·53 to 0·57 in breadth.

657.—*Corvus Lawrencei, Hume.*

I separated the Punjab Raven under the above name (LAHORE to YARKAND p. 83), and I then stated what I wish now to repeat, that if we are prepared to consider *corax, littoralis, thibetanus* and *japonensis,* all as one and the same species, then *Lawrencei* too must be suppressed; but if any of these are retained as distinct, then so must *Lawrencei* be.

The Punjab Raven breeds throughout the Punjab, (except perhaps in the Dehra Ghazee Khan District,) in Bhawulpoor, Bikaneer, and the northern portions of Jeypoor and Jodhpoor, extending rarely as far south as Sambhur. To Sindh it is merely a seasonal visitant, and I could not learn that they breed there, nor have I ever known of one breeding anywhere east of the Jumna. Even in the Delhi Division of the Punjab they breed sparingly, and one must go further north and west to find many nests.

The breeding season lasts from early in December to quite the end of March, but this varies a little according to season and locality, though the majority always, I think, lay in January.

The nest is generally placed in single trees of no great size, standing in fields or open jungle. The thorny Acacias are often selected, but I have seen them on Sisoo and other trees.

The nest, placed in a stout fork as a rule, is a large, strong, compact, stick structure, very like a Rook's nest at home, and like these is used year after year, whether by the same birds or others of the same species I cannot say. Of course they never breed in company: I *never* found two of their nests within 100 yards of each other, and, as a rule, they will not be found within a quarter of a mile of each other.

Five is, I think, the regular complement of eggs; very often I have only found four fully incubated eggs, and on two or three occasions six have, I know, been taken in one nest, though I never myself met with so many.

I find the following old note of the first nest of this species that I ever took :—

"At Hansie, in Skinner's Beerh, December 19th, 1867, we found our first Raven's nest. It was in a solitary Keekur tree, which originally of no great size had had all but two upright branches lopped away. Between these two branches was a large compact stick nest fully 10 inches deep and 18 inches in diameter, and not more than 20 feet from the ground. It contained five slightly incubated eggs, which the old birds evinced the greatest objection to part with, not only flying at the head of the man who removed them, but some little time after they had been removed similarly attacking the man who ascended the tree to look at the nest. After the eggs were gone, they sat themselves on a small branch above the nest side by side, croaking most ominously, and shaking their heads at each other in the most amusing manner, every now and then alternately descending to the nest and scrutinizing every portion of the cavity with their heads on one side as if to make sure that the eggs were really gone."

Mr. W. Theobald makes the following note of this bird's nidification in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range :—

"Lay in January and February; eggs, four only; shape, ovato pyriform; size, 1·7 by 1·3; colour, dirty sap green, blotched with blackish-brown; also pale green spotted with greenish-brown and neutral; nest of sticks difficult to get at, placed in well selected trees or holes in cliffs."

I have not verified the fact of their breeding in holes in cliffs, but it is very possible that they do. All I found near Pind Dadan Khan and in the Salt Range were doubtless in trees, but I explored a very limited portion of these hills.

Captain C. H. T. Marshall, writing from Bhawulpoor on the 17th February, says: "I succeeded yesterday in getting four eggs of the Punjab Raven. The eggs were hard-set and very difficult to clean."

From Sambhur Mr. R. M. Adam tell us: "This Raven is pretty common during the cold weather, but pairs are seen about this throughout the year. They are very fond of attaching themselves to the camps of the numerous parties of Banjaras who visit the lake.

"I obtained a nest at the end of January which contained three eggs, and a fourth was found in the parent bird. The nest was about 15 feet from the ground in a Kaggera tree *(Acacia leucophlœa)* which stood on a bare sandy waste with no other tree within half a mile in any direction."

The eggs are, as might be expected, much the same as those of the European Raven. In shape they are moderately broad ovals, a good deal pointed towards the small end, but, as in the Oriole, greatly elongated varieties are very common, and short globular ones almost unknown. The texture of the egg is close and hard, but they usually exhibit little or no gloss. In the colour of the ground, as well as in the colour, extent, and character of the markings, the eggs vary surprisingly. The ground colour is in some a clear pale greenish-blue; in others pale blue; in others a dingy olive; and in others again a pale stone colour. The markings are blackish-brown, sepia, and olive brown and rather pale inky purple. Some have the markings small, sharply defined, and thinly sprinkled; others are extensively blotched and streakily clouded; others are freckled or smeared over the entire surface, so as to leave but little, if any, of the ground colour visible. Often several styles of marking and shades of colouring are combined in the same egg. Almost each nest of eggs exhibits some peculiarity, and varieties are endless. With sixty or seventy eggs before one, it is easy to pick out in almost every case all the eggs that belong to the same nest, and this is a peculiarity that I have observed in the eggs of many members of this family. All the eggs out of the same nest usually closely resemble each other, while almost *any* two eggs out of different nests are markedly dissimilar.

They vary from 1·72 to 2·25 in length, and from 1·2 to 1·37 in width; but the average of seventy-two eggs measured is 1·94 by 1·31.

659.—*Corvus corone, Lin.*

The only eggs of the Indian Carrion Crow which I have seen, and one of which, with the parent bird, I owe to Mr. Brooks, were taken by the latter gentleman on the 30th May at Sonamerg, Cashmere.

The eggs were broad ovals, somewhat compressed towards one end, and of the regular Corvine type—a pretty pale green ground, blotched, smeared, streaked, spotted, and clouded, nowhere very profusely but most densely about the large end, with a greenish or olive brown and pale sepia. The brown is a brighter and greener, or duller and more olive, lighter or darker, in different eggs, and even in different parts of the same egg. The shell is fine and close, but has only a faint gloss.

The eggs only varied from 1·67 to 1·68 in length, and from 1·14 to 1·18 in breadth.

I am not prepared to assert that our Northern Indian bird (which I long ago separated as *pseudo-corone,*) is identical with the *European* Carrion Crow. On the contrary I still consider it distinct.

Our Indian bird is rare. I think in all these years I have only succeeded in obtaining two specimens besides the one procured in Cashmere by Mr. Brooks.

Comparing these with three European specimens I note certain differences which, if constant, would be of specific value. In our birds the legs and feet are very much smaller, the wings are more than an inch shorter, the culmen is much more raised, the upper plumage has a bluer, that of the European birds, a redder purple gloss, and the lower surface in our birds is greyer than that of the European specimens.

Whether this bird breeds regularly or only as a straggler in Cashmere we do not know; it is always overlooked and passed by as a "Common Crow." Future visitors to Cashmere should try and clear up both the identity of the bird and all particulars about its nidification.

660.—*Corvus Levaillantii, Less.*

The Bow-billed Corby (under which head I include * *C. culminatus,* Sykes, *C. intermedius,* Adams, *C. andamanensis,* Tytler, and each and all of the races that occur within our limits) breeds almost everywhere in India, alike in the low country and in the hills both of Southern and Northern India, to an elevation of fully 8,000 feet.

March to May is, I consider, the normal breeding season; in the plains the majority lay in April, rarely latter, and in the hills in May; but in the plains a few birds lay also in February.

The nest is placed as a rule on good sized trees and pretty near their summits. In the plains Mangos and Tamarinds seem to be preferred, but I have found the nests on many different kinds of trees. The nest is large, circular, and composed of moderate sized twigs; sometimes it is thick, massive, and compact; sometimes loose and straggling; always with a considerable depression in the centre, which is smoothly lined with large quantities of horse-hair, or other stiff hair, grass, grass-roots, cocoa-nut fibre, &c. In the hills they use *any* animal's hair or fur, if the latter is pretty stiff. They don't, according to any experience, affect luxuries in the way of soft down; it is always something moderately stiff, of the coir or horse-hair type; nothing soft and fluffy. Coarse human hair, such as some of our native fellow-subjects can boast, is often taken, when it can be got, in lieu of horse-hair.

They lay four or five eggs. I have quite as often found the latter as the former number. I have never myself seen, but I have heard on good authority of six eggs being found.

Captain Unwin writes: "I found a nest of the Bow-billed Corby in the Agrore Valley, containing four eggs, on the 30th April. It was placed in a Cheer tree about 40 feet from the ground, and was made of sticks and lined with dry grass and hair."

Mr. W. Theobald makes the following remarks on the breeding of this bird in the Valley of Cashmere:—

"Lays in the third week of April. Eggs four in number, ovato pyriform, measuring from 1·6 to 1·7 in length and from 1·2 to 1·25 in breadth. Colour green spotted with brown; valley generally. Nest placed in *Chinar* and difficult trees."

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* See STRAY FEATHERS, Vol. II, 1874, p. 243, and LAHORE TO YARKAND, p. 85.

Captain Hutton tells us that the Corby "occurs at Mussoorie throughout the year, and is very destructive to young fowls and pigeons; it breeds in May and June, and selects a tall tree, near a house or village, on which to build its nest, which is composed externally of dried sticks and twigs, and lined with grass and hair, which latter material it will pick from the backs of horses and cows, or from skins of animals laid out to dry. I have had skins of the Surrow (*Nœmorhœdus thar*) nearly destroyed by their depredations. The eggs are three or four in number."

From the plains no one seems to have sent any notes. I transcribe a few of my own.

"On the 11th March, near Oreyah, I found a nest of a Corby—a good large stick nest, built with Tamarind twigs, and placed fully 40 feet from the ground in the fork of a Mango tree standing by itself. The nest measured quite 18 inches in diameter and 5 in thickness. It was a nearly flat platform with a central depression 8 inches in diameter and not more than 2 deep, but there was a solid pad of horse-hair more than an inch thick below this. I took the mass out; it must have weighed half a pound. Four eggs much incubated.

"*Etawah,* 14*th March.*—Another nest at the top of one of the huge Tamarind trees behind the Asthul: could not get up it. A boy brought the nest down; it was not above a foot across, and perhaps 3 inches deep; cavity about 6 inches in diameter, thickly lined with grass roots, inside which again was a coating of horse-hair perhaps a rupee in thickness; nest swarming with vermin. Eggs, five, quite fresh, four eggs normal; one, quite round, a pure pale slightly greenish-blue, with only a few very minute spots and specks of brown having a tendency to form a feeble zone round the large end. Measures only 1·25 by 1·2. Neither in shape, size, nor colour is it like a Corby's egg; but it is not a Koel's, or any of our parasitic Cuckoos, and I have seen at home similar pale eggs of the Rook, Hooded Crow, Carrion Crow, and Raven.

"*Bareilly, May* 10*th.*—Three fresh eggs in large nest on a Mango tree. Nest as usual, but lined with an immense quantity of horse-hair. We brought this home and weighed it; it weighed six ounces, and horse-hair is very light."

"In the Nilghiris, writes Mr. Davison, "the Corby builds a coarse nest of twigs, lined with Cocoa-nut fibre or dry grass high up in some densely foliaged tree. The eggs are usually four, often five, in number. The birds lay in April and May."

Miss Cockburn again says: "They build like all Crows on large trees merely by laying a few sticks together on some strong branch generally very high up in the tree. I do not remember ever seeing more than one nest on a tree at a time, so that they differ very much from the Rook in that respect. They lay four eggs of a bluish-green with dusky blotches and spots, and nothing can exceed the care and attention they bestow on their young. Even when the latter are able to leave their nests and take long flights the parent birds will accompany them as if to prevent their getting into mischief. The nests are found in April and May."

From Ceylon we hear from Mr. Layard that "about the villages the Carrion Crow builds its nest in the Cocoa-nut trees. In the jungles it selects a tall tree, amid the upper branches of which it fixes a frame-work of sticks, and on this constructs a nest of twigs and grasses. The eggs, from three to five, are usually of a dull greenish-brown colour, thickly mottled with brown, these markings being most prevalent at the small end.

"They are usually laid in January and February."

Mr. W. Theobald gives the following notes on the nidification of this bird in Tenasserim and near Deoghur :—

" Lays in the 3rd week of February and fourth week of March; eggs, ovato pyriform; size 1·66 by 1·15; colour, dull sap green much blotched with brown; nest carefully placed in tall trees."

The eggs, though smaller, closely resemble, as might have been expected, those of the Raven, but they are, I think, typically somewhat broader and shorter. Almost every variety, so far as coloration goes, to be found amongst those of the Raven, are found amongst the eggs of the present species, and *vice versâ*; and for a description of these it is only necessary to refer to the account of the former species; but I may notice that amongst the eggs of *Levaillantii* I have not yet noticed any so boldly blotched as is occasionally the case with some of the eggs of the Raven, which remind one no little, so far as the character of the markings go, of eggs of *Œdienemus crepitans* and *Esacus recurvirostris*. Like those of the Raven the eggs exhibit little gloss, though here and there a fairly glossy egg is met with. Eggs from various parts, of the Himalayas, of the plains of Upper India, of the hills and plains of Southern India, do not differ in any respect. *Inter se* the eggs from each locality differ surprisingly in size, in tone of colour, and in character of markings; but when you compare a dozen or twenty from each locality, you find that these differences are purely individual and in no degree referable to locality.

There are just as big eggs and just as small ones from Simla and Kotegurh, from Cashmere, from Etawah, Bareilly, Futtehgurh, from Kotagherry, and Conoor; all that one can possibly say is that perhaps the plains birds do on the *average* lay a *shade larger* eggs than the Himalayan or Nilghiri ones.

Taking the eggs as a whole, I think that in size and shape they are about intermediate between the eggs of the European Carrion Crow and Rook. But they vary, as I said, astonishingly in size, from 1·5 to 1·95 in length and in breadth from 1·12 to 1·22, and I have one perfectly spherical egg, a deformity of course, and which measures 1·25 by 1·2.

The average of thirty Himalayan eggs is 1·73 by 1·18, of 20 Plains eggs is 1·74 by 1·2, of 15 Nilghiri eggs is 1·7 by 1·18. I would venture to predict that with fifty of each, there would not be an hundredth of an inch between their averages.

663.—*Corvus impudicus, Hodgs.*

Throughout India and Upper Burmah the Common Crow resides and breeds: not ascending the hills either in Southern or Northern India to any great elevation, but breeding up to 4,000 feet in the Himalayas.

The breeding season *par excellence* is June and July, but occasional nests will be found earlier even in Upper India, and in Southern and Eastern India a great number lay in May. The nests are commonly placed in trees without much regard to size or kind, though densely foliaged ones are preferred, and I have just as often found several in the same tree as single ones. At times they will build in nooks of ruins or large deserted buildings, where these are in well inhabited localities, but out of many thousands I have only seen three or four nests in such abnormal positions.

The nest is placed in some fork, and is usually a ragged stick platform, with a central depression lined with grass roots; but they are not particular as to material: I have found wool, rags, grass, and all kinds of vegetable fibre, and Mr. Blyth mentions that he has "seen several nests composed more or less, and two almost exclusively, of the wires taken from soda-water bottles, which had been purloined from the heaps of these wires commonly set aside by the native servants until they amount to a saleable quantity." Four is the normal number of eggs laid, but I often have found five and on two occasions six. It is in this bird's nest that the Koel chiefly lays.

Typically the eggs may, I think, be said to be rather broad ovals, a good deal pointed towards the small end, but really the eggs vary so much in shape that, even with nearly two hundred before me, it is difficult to decide what is really the most typical form. Pyriform, elongated, and globular varieties are common; long Cormorant-shaped eggs and perfect ovals are not uncommon. As regards the colour of the ground, and colour, character, and extent of marking, all that I have above said of the Raven's eggs apply to those of this species, but varieties occur amongst those of the latter, which I have not observed in those of the former. In some the ground is a very pale, pure, bluish-green, in others it is dingier and greener. All are blotched, speckled, and streaked more or less with somewhat pale sepia markings, but in some the spots and specks are a darker brown and, as a rule, well defined, and there is very little streaking, while in others the brown is pale and muddy, the markings ill defined, and nearly the whole surface of the egg is freckled over with smudgy streaks. Sometimes the markings are most numerous at the large end, sometimes at the small, no two eggs are exactly alike, and yet they have so strong a family resemblance that there is no possibility of mistaking them. Generally the markings as a whole are less bold, and the general colour of a large body of them laid together is bluer and brighter than that of a similar drawer-full of Ravens' eggs. As a whole, too, they are more glossy. I have one egg before me bright blue and almost as glossy as a Mynah's, thickly blotched and speckled at the broad end, and thinly spotted elsewhere with olive green, blackish-brown, and pale purple. Another egg, a pale pure blue, is spotless, except at the large end, where there is a conspicuous cap of olive brown and olive green spots and speckles, and there are numerous other abnormal varieties which I have not observed amongst the Ravens.

On the whole the eggs do *not* vary much in size; out of one hundred and ninety-seven, one hundred and ninety-five varied between 1·28 and 1·65 in length, and 0·98 and 1·15 in breadth. One egg measures only 1·2 in length, and one is only 0·96 in breadth; but the average of the whole is 1·44 by 1·06.

665.—*Corvus monedula, Lin.*

I only know positively of the Jackdaws breeding in one district within our limits, *viz.*, Cashmere; but I have seen it in the hills in summer, as far east as the Valley of the Beas, and it must breed everywhere in suitable localities between the two.

In the cold season of course the Jackdaw descends into the plains of the North-West Punjaub, is very numerous near the foot of the hills, and has been found cis-Indus as far east as Umballa, and south, as Ferozpoor, Jhelum, and Kalabagh. Trans-Indus it extends unto the Dehra Ghazi Khan District.

I have never taken its eggs myself.

Mr. W. Theobald makes the following remarks on its nidification in the Valley of Cashmere:—

"Lays in the first week of May; eggs four, five, and six in number, ovato pyriform and long ovato pyriform, measuring from 1·26, 1·45, to 1·60 in length and from 0·9 to 1·00 in breadth; colour, pale, clear, bluish-green, dotted and spotted with brownish-black; valley generally; in holes of rocks, beneath roofs, and in tall trees."

Dr. Jerdon says: "It builds in Cashmere in old ruined palaces, holes in rocks, beneath roofs of houses, and also in tall trees, laying four to six eggs, pale bluish-green, dotted and spotted with brownish-black."

Mr. Brookes writes: "The Jackdaw breeds in Cashmere in all suitable places: holes in old Chinar (Plane) trees, and in house walls, under the eaves of houses, &c. I did not note the materials of the nests, but these will be the same as in England."

The eggs of this species are typically rather elongated ovals, somewhat compressed towards one end. The shell is fine, but has only a faint gloss. The ground colour is a pale greenish-white, but in some eggs there is very little green, while in a very few the ground is quite a bright green. The markings, sometimes very fine and close, sometimes rather bold and thinly set, consist of specks or spots of deep blackish-brown, olive brown, and pale inky purple. In most eggs all these colours are represented, but in some eggs the olive-, in others the blackish-, brown is almost entirely wanting. In some eggs the markings are very dense towards the large end, in others they are pretty uniformly distributed over the whole surface; in some they are very minute and speckly, in others they average the tenth of an inch in diameter.

The eggs that I possess vary from 1·34 to 1·52 in length, and from 0·93 to 1·02 in breadth; but the average of sixteen eggs was 1·4 by 0·98.

666.—*Nucifraga hemispilla, Vig.*

The Himalayan Nutcracker is *very* common in the Fir-clad hills north of Simla, where it particularly affects forests of the so-called Pencil Cedar, which is, I think, the *Pinus excelsa.* I have never been able to obtain the eggs, for they must lay in March or early in April; but I have found the nest near Fagoo early in May with nearly full fledged young ones, and my people have taken them with young in April below the Jalouri Pass.

The tree where I found the nest is, or rather *was* (for the whole hill slope has been denuded for potatoe cultivation), situated on a steeply sloping hill facing the south, at an elevation of about 6,500 feet. The nest was about 50 feet from the ground, and placed on *two* side branches just where, about 6 inches apart, they shot out of the trunk. The nest was just like a Crow's—a broad platform of sticks, but rather more neatly built, and with a number of green Juniper twigs with a little moss and a good deal of grey lichen intermingled. The nest was about 11 inches across and nearly 4 inches in external height. There was a broad, shallow, central depression 5 or 6 inches in diameter and perhaps 2 inches in depth, of which an inch was filled in with a profuse lining of grass and Fir needles (the long ones of *P. longifolia*) and a little moss. This was found on the 11th May, and the young, four in number, were sufficiently advanced to hop out to the ends of the bough and half-fly half-tumble into the neighbouring trees, when my man with much difficulty got up to the nest.

668 *bis.—Pica bactriana, Bonap.*

Mr. Gray gives the present species, the Afghan or White-rumped Himalayan Magpie, from Bhootan, but it does not occur there: it is there replaced by *bottanensis*, the Himalayan Black-rumped Magpie (see further LAHORE TO YARKAND, p. 88.)

The White-rumped Himalayan Magpie breeds, we know, in Afghanistan, and also throughout Ladak from the Zojee-la Pass right up to the Pangong Lake, but it breeds so early that one is never in time for the eggs. The passes are not open until long after they are hatched.

Captain Hutton says this bird "is found all the year round from Quettah to Girishk, and is very common. They breed in March, and the young are fledged by the end of April. The nest is like that of the European bird, and all the manners of the Afghan Magpie are precisely the same. They may be seen at all seasons."

669.—*Garrulus bispecularis, Vig.*

The Himalayan Jay breeds pretty well throughout the lower ranges of the Himalayas. It is nowhere, that I have seen, numerically very abundant, but it is to be met with everywhere. It lays in March and April, and, though I have never taken the nest myself, I have now repeatedly had it sent me. It builds at moderate heights, rarely above 25 feet from the ground, in trees or thick shrubs, at elevations of from 3,000 to 7,000 feet. The nest is a moderate sized one, 6 to 8 inches in external diameter, composed of fine twigs and grass and lined with finer grass and roots.

The nest is usually placed in a fork.

The eggs are four to six in number.

Mr. Hodgson notes that he "found a nest" of this species "on the 20th April, in the forest of Shewpoori, at an elevation of 7,000 feet. The nest was placed in the midst of a large tree in a fork. The nest was very shallow, but regularly formed and compact. It was composed of long seeding grasses wound round and round, and lined with finer and more elastic grass stems. The nest measured about 6½ inches in diameter, but the cavity was only about half an inch deep."

Captain C. H. T. Marshall remarks: "I only took one authenticated set of eggs of this species, (I found several with young,) as it is an early breeder—I say authenticated eggs, because I *think* we may have attributed some to *Garrulus lanceolatus*, as the nests and eggs are very similar, and having a large number of the eggs of the latter, I took some from my shikaree without verifying them.

"The nest I took on the 6th May 1873, at Murree, was at an elevation, I should say, of between 6,500 and 7,000 feet, (as it was near the top of the hill,) in the forest. The tree selected was a Horse-chestnut, about 25 feet high. The nest was near the top, which is the case with nearly all the Crows' and Magpies' nests that I have taken. It was of loose construction, made of twigs and fibres, and contained five partially incubated eggs.

"The eggs are similar to those of *G. lanceolatus*. I have carefully compared the five of the species which I am now describing with twenty of the other, and find that the following differences exist. The egg of *G. bispecularis* is more obtuse and broader, there is a brighter gloss on it, and the speckling is more marked; but with a large series of each I think the only perceptible difference would be its greater breadth, which makes the egg look larger than that of the Black-throated Jay. My four eggs measure 1·15 by 0·85 each.

"This species only breeds once in a year, and from my observations lays in April, all the young being hatched by the 15th May. Captain Cock and myself carefully hunted up all the forests round Murree, where the birds were constantly to be seen, commencing our work after the 10th May, and we found nothing but young ones."

The eggs of this species are, as might be expected, very similar to those of *G. lanceolatus*, but they are perhaps slightly larger and the markings somewhat coarser. The eggs are rather broad ovals, a good deal pointed towards one end. The ground colour is pale greenish-white, and they are pretty finely freckled and speckled (most densely so towards the large end, where the markings are almost confluent) with dull, rather pale, olive brown, amongst which a little speckling and clouding of pale greyish-purple is observable. The eggs are decidedly smaller than those of the English Jay, and few of the specimens I have exhibit any of those black hair-like lines often noticeable in both the English Jay and *lanceolatus*.

In length the eggs that I have measured varied from 1·1 to 1·21, and in breadth they only varied from 0·84 to 0·87.

670.—*Garrulus lanceolatus, Vig.*

The Black-throated Jay breeds throughout the Himalayas, at moderate elevations of from 4,000 to 8,000 feet, from the Valley of Nepal to Murree.

They lay from the middle of April until the middle of June.

They build on trees or thick bushes, never at any great height from the ground, and often within reach of the hand. They always, I think, choose a densely foliaged tree, and place the nest sometimes in a main fork and sometimes on some horizontal bough supported by one or more upright shoots.

All the nests I have seen were moderately shallow cups, built with slender twigs and sticks, some 6 inches in external diameter and from less than 3 inches to nearly 4 inches in height, with a nest cavity some 4 inches across and 2 inches deep, lined with grass and moss-roots. Once only I found a nest almost entirely composed of grass, and with no lining but fine grass stems.

The eggs vary from four to six, but this latter number is rarely met with.

Captain C. H. T. Marshall writes: "This is one of the commonest birds about Murree; we always found it well to the front during our rambles, chattering about in the trees. They breed from the middle of April till the end of June. We have taken their eggs between the 20th April and the 16th June. They keep above 5,000 feet. I never observed any in the lower ranges. The nest is not a difficult one to find, being large and of loose construction; from 15 to 30 feet up a medium-sized tree close to the trunk or sometimes in a large fork. They never seem to build in the Spruce Firs which abound about Murree. They are by no means shy birds, and hop about the trees close by while their nest is being examined. Five is the ordinary number of eggs, which differ very much in appearance and size: the longest I have measures 1·25 and the shortest 1·1. Some are paler, some darker; some are of a uniform pale greenish-ash colour with a darker ring, while others are thickly speckled and freckled with a darker shade of the same colour. Some lack the odd ink scratch which is so often to be seen on the larger end, and is the most peculiar feature of the egg, while a few have it at the thinner end.

"I should describe the average type as a long egg for its breadth; ground colour greenish-ashy with very thick sprinklings of spots of a darker and more greenish shade of the same colour, a ring of a darker dull olive round the large end, on which are one or two lines that look like a haphazard scratch from a fine steel pen."

From Dhurmsala Captain Cock wrote to me that this was "a most common bird at Dhurmsala; appears in large flocks during the winter, and often mixes with *Garrulus bispecularis* and *Urocissa flavirostris.* Pairs off about the end of April, when nidification begins. Builds a rather rough nest of sticks, generally placed on a tall sapling Oak near the top; sometimes among the thicker branches of a Pollard Oak; outer nest small twigs roughly put together; inner nest dry roots and fibres, rather deep cup-shaped. Eggs number from four to five and vary in shape. I have found them sometimes nearly round but more generally the usual shape. They vary in their colour too, some being much lighter than others, but most of them have a few hair-like streaks on the larger end."

From Mussoorie Captain Hutton tells us that "the Black-throated Jay breeds in May and June, placing the nest sometimes on the branch of a tall Oak tree (*Quercus incana*), at other times in a thick bush. It is composed of a foundation of twigs, and lined with fine roots of grass, &c., mixed with the long black fibres of ferns and mosses which hang upon the forest trees, and have much the appearance of black horse-hair. The nest is cup-shaped, rather shallow, loosely put together, circular, and about 4½ inches in diameter. The eggs are sometimes three sometimes four in number, of a greenish-stone-grey, freckled chiefly at the larger end with dusky and a few black hair-like streaks which are not always present; they vary also in the amount of dusky freckling at the larger end. The nestling bird is devoid of the lanceolate markings on the throat."

From Nynee Tal Captain G. F. L. Marshall writes: "The Black-throated Jay builds a very small cup-shaped nest of black hair-like creepers and roots, intertwined and placed in a rough irregular casing of twigs. A nest found on the 2nd June containing three hard-set eggs was placed conspicuously on the top of a young Oak sapling about 7 feet high, standing alone in an open glade, in the forest on Aya Pata, which is about 7,000 feet above the sea. Another nest, found at an elevation of about 4,500 feet on the 9th June, contained two eggs; it was placed about 10 feet from the ground in a small tree in a hedgerow amongst cultivated fields."

Mr. Hodgson notes from Jaha Powah: "Found five nests of this species between 18th and 30th May. Builds near the tops of moderate-sized trees in open districts, making a very shallow nest of thin elastic grasses sparingly used and without lining. The nest is placed on some horizontal branch against some upright twig, or at some horizontal fork. It is nearly round and has a diameter of about 6 inches. They lay three to four eggs of a sordid vernal green clouded with obscure brown."

The eggs are somewhat lengthened ovals, very much smaller than, though so far as coloration goes very similar to, those of *G. glandarius.* The ground colour in some is a brown stone colour, in others pale greenish-white, and intermediate shades occur, and they are very minutely and feebly freckled and mottled over the whole surface with a somewhat pale sepia brown. This mottling differs much in intensity; in some few eggs indeed it is absolutely wanting, while in others, though feeble elsewhere, it forms a distinct, though undefined, brownish cap or zone at the large end. The eggs generally have little or no gloss. It is not uncommon to find a few hair-like dark brown lines, more or less zigzag, about the larger end.

In length they vary from 1·03 to 1·23, and in breadth from 0·78 to 0·88; but the average of twenty-four eggs is 1·12 by 0·85.

671.—*Urocissa occipitalis, Blyth.*

I have never myself found the nest of the Red-billed Blue Magpie; although it does breed sparingly as far east as Simla and Kotegurh, it is not till you cross the Jumna that it is abundant. East of the Jumna, about Mussoorie, Teeree, Gurhwal, Kumaon, and in Nepal, it is common. How far east it extends, where it meets *U. sinensis,* and whether this latter is really specifically distinct, are questions that remain to be solved.

From Mussoorie Captain Hutton tells us that "this species occurs at Mussoorie throughout the year. It breeds at an elevation of 5,000 feet in May and June, making a loose nest of twigs externally and lined with roots. The nest is built on trees, sometimes high up, at others about 8 or 10 feet from the ground. The eggs are from three to five, of a dull greenish-ash-grey, blotched and speckled with brown dashes confluent at the larger end, the ends nearly equal in size. It is very terrene in its habits, feeding almost entirely on the ground."

The eggs of this species much resemble those of the European Magpie, but are considerably smaller. They are broad, rather perfect, ovals, somewhat elongated and pointed in many specimens. They exhibit but little gloss. The ground colour varies much, but in all the examples that I possess, which I owe to Captain Hutton's kindness, it is either of a yellowish-cream, pale *café au lait* or buff colour, or pale dull greenish. The ground is profusely blotched, spotted, and streaked (the general character of the markings being striations parallel to the major axis), with various shades of reddish and yellowish brown and pale inky purple. The markings vary much in intensity as well as in frequency, some being so closely set as to hide the greater part of the ground colour; but in the majority of the eggs they are more or less confluent at the large end, where they form a comparatively dark, irregular, blotchy zone.

The eggs vary from 1·25 to 1·35 in length, and from 0·93 to 0·96 in breadth; but I have only measured six.

672.—*Urocissa flavirostris, Blyth.*

The Yellow-billed Blue Magpie breeds throughout the lower ranges of the Himalayas in well wooded localities from Hazara to Bhootan, and very likely further east still. I cannot admit the distinctness of Gould's *U. cucullata.* There is I consider no *second* yellow-billed species within the limits above indicated. Either he has founded the species on one of the many slightly differing types of *flavirostris,* all of which you may shoot either east or west out of the same flock, or upon a yellow-billed female *occipitalis,* such as one gets every now and then out of a flock of these latter.

The present species breeds from April to August, mostly however, I think, laying in May. The nest, which is rather coarse and large, made of sticks and lined with fine grass or grass roots, is, so far as my experience goes, commonly placed in a fork near the top of some moderate sized but densely foliaged tree.

I have never found a nest at a lower elevation than about 5,000 feet; as a rule they are a good deal higher up.

They lay from four to six eggs, but the usual number is five.

Captain C. H. T. Marshall writes: "The Yellow-billed Blue Magpie breeds commonly about Murree. I have never seen the bird below 6,000 feet in the breeding season. They do not commence laying till May, and I have taken eggs nearly fresh as late as the 15th August. I do not think the bird breeds twice, as the earliest eggs taken were found on the 10th May.

"They build in hill Oaks as a rule, the height of the nest from the ground varying much, some being as low as 10 feet, others nearer 30 feet. The hen bird sits close, and sometimes (when the nest is high up) does not even leave the nest when the tree is struck below. The nest is a rough structure built close to the trunk, externally consisting of twigs and roots and lined with fibres. The egg cavity is circular and shallow, not at all neatly lined. The outer part of the nest is large compared to what I should call the true nest, and consists of a heap of twigs, &c., like what is gathered together for the platform of a Crow's nest.

" The eggs, which are four in number, vary in length from 1·45 to 1·25, and in breadth from 0·9 to 0·75. The ordinary type is an egg a good deal pointed at the thinner end. The ground colour is greenish-white blotched and freckled with ruddy brown, with a ring at the larger end of confluent spots. The young birds are of a very dull colour until after the first month. The normal number of eggs laid appears to be four."

Captain Cock remarks *in epist.*: " *U. flavirostris* is common at Dhurmsala, but the nest is rather difficult to find. I have only taken six in three years. It is usually placed amongst the branches of the hill Oak, where it has been polled, and the thickly growing shoots afford a good cover; but sometimes it is on the top of a small slender sapling. The nest is a good sized structure of sticks, with a rather deep cup lined with dried roots; in fact, it is very much like the nest of *Garrulus lanceolatus*, only larger and much deeper. They generally lay four eggs, which differ much in colour and markings."

Dr. Jerdon says: "I had the nest and eggs brought me once. The nest was made of sticks and roots. The eggs, three in number, were of a greenish-fawn colour very faintly blotched with brown."

The eggs are of the ordinary Indian Magpie type, scarcely, if at all, smaller than those of *U. occipitalis*, and larger than the average of eggs of either *Dendrocitta rufa* or *D. himalayensis*. Doubtless all kinds of varieties occur, as the eggs of this family are very variable; but I have only seen two types—in the one the ground is a pale dingy yellowish-stone colour, profusely streaked, blotched, and mottled with a somewhat pale brown more or less olivaceous in some eggs, the markings even in this type being generally densest towards the large end, where they form an irregular mottled cap: in the other type the ground is a very pale greenish-drab colour; there is a dense confluent raw sienna coloured zone round the large end, and only a few spots and specks of the same colour scattered about the rest of the egg. All kinds of intermediate varieties occur. The texture of the shell is fine and compact, and the eggs are mostly more or less glossy.

The eggs vary from 1·22 to 1·48 in length, and from 0·8 to 0·96 in breadth; but the average of twenty-seven eggs is 1·3 by 0·92.

673.—*Cissa speciosa, Shaw.*

According to Mr. Hodgson's notes the Green Jay breeds in Nepal in the lower valleys and in the Terai from April to July. The nest is built in clumps of Bamboos, is large and cup-shaped, composed of sticks and leaves, coated externally with Bamboo leaves and vegetable fibres, and lined inside with fine roots. It lays four eggs, one of which is figured as a broad oval, a good deal pointed towards one end, with a pale stone coloured ground freckled and mottled all over with sepia brown, and measuring 1·27 by 0·89.

Mr. Eugene Oates writes: "In the Pegu Hills on the 19th April I found the nest of the Green Jay, and shot the female off it.

"The nest was placed in a small tree, about 20 feet from the ground, in a nullah and well exposed to view. The nest was neatly built, exteriorly of leaves and coarse roots, and finished off interiorly with finer fibres and roots; depth about 2 inches; inside diameter 6 inches. Contained three eggs nearly hatched; all got broken; I have the fragments of one. The ground colour is greenish-white much spotted and freckled with pale yellowish-brown spots and dashes, more so at the larger end than elsewhere. The colour of the egg is thoroughly garruline."

Sundry fragnents that reached me, kindly sent to me by Mr. Oates, had a dull white ground, very thickly freckled and mottled all over, as far as I could judge, with dull, pale, yellowish-brown and purplish-grey, the former preponderating greatly. As to size and shape, this deponent sayeth nought.

674.—*Dendrocitta rufa, Lath.*

Pending the discovery of any distinct Chinese representative of this species, the Indian Tree-pie must stand under Latham's name *rufa*.

This species breeds throughout the Continent of India, alike in the plains and in the hills, up to an elevation of 6,000 or 7,000 feet.

I personally have found the nest with eggs in May, June, July, and during the first week of August, in various districts in the North-West Provinces, and have had them sent me from Saugor (taken in July) and from Hansi (taken in April, May, and June); but perhaps because the bird is so common scarcely any one has sent me notes about its nidification, and I do not know whether in other parts of India and Burmah its breeding season is the same as with us.

The nest is always placed in trees, generally in a fork, near the top of good large ones; Babool and Mango are very commonly chosen in the North-West Provinces, though I have also found it on Neem and Sissoo trees. It is usually built with dry twigs as a foundation, very commonly thorny and prickly twigs being used, on which the true nest, composed of fine twigs and lined with grass roots, is constructed. The nests vary much; some are large and loosely put together, say, fully 9 inches in diameter and 6 inches in height externally; some are smaller and more densely built, and perhaps not above 7 inches in diameter and 4 inches in depth. The egg cavity is usually about 5 inches in diameter and 2 inches in depth, but they vary very much both in size and materials; and I see that I note of one nest taken at Agra on the 3rd August—" A very shallow saucer some 6 inches in diameter, and with a central depression not above 1½ inch in depth. It was composed *exclusively* of roots; externally somewhat coarse; internally of somewhat finer ones. It was very loosely put together."

Five is the full complement of eggs, but it is very common to find only four fully incubated ones.

Mr. W. Blewitt writes that he "found several nests in the latter half of April, May, and the early part of June in the neighbourhood of Hansie.

"Four was the greatest number of eggs I found in any nest.

"The nests were placed in Neem, Keeker and Shishum trees, at heights of from 10 to 17 feet from the ground, and were densely built of twigs mostly of the Keekur and Shishum, and more or less thickly lined with fine straw and leaves. They varied from 6 to 8 inches in diameter and from 2 to 3 inches in depth."

Mr. A. Anderson writes: "The Indian Magpie lays from April to July, and I have once actually seen a pair building in February. Their eggs are of two very distinct types,—the one, which, according to my experience, is the ordinary one, is covered all over with reddish brown spots or rather blotches, chiefly towards the big end, on a pale greenish-white ground, and is rather a handsome egg; the other is a pale green egg with *faint brown* markings, which are confined almost entirely to the obtuse end. I have another clutch of eggs taken at Budaon in 1865, which presents an intermediate variety between the above two extremes; these are profusely blotched with russet brown on a dirty white ground."

"The second and third nests above referred to contained five eggs; but the usual complement is not more than four. On the 2nd August 1872, I made the following note relative to the breeding of this bird: The bird flew off immediately we approached the tree, and never appeared again. The nest viewed from below looked larger; this is owing to dry *Babool* twigs or rather small branches, (some of them having thorns from an inch to 2 inches long!) having been used as a foundation, and actually encircling the nest, no doubt by way of protection against vermin; some of these thorny twigs were a foot long, and they had to be removed piecemeal before the nest proper could be got at. The egg cavity is deep, measuring 5 inches in depth by 4 in breadth inside measurement; it is well lined with khus grass." (Andropon, sp.?)

The eggs are typically somewhat elongated ovals, a good deal pointed towards the small end. They vary extraordinarily in colour and character, as well as extent of markings, but, as remarked when speaking of the Raven, all the eggs out of the same nest closely resemble each other, while the eggs of different nests are almost invariably markedly distinct. There are, however, two leading types—the one in which the markings are bright red, brownish-red or pale pinkish-purple; and the other in which they are olive brown and pale purplish-brown. In the first type the ground colour is either pale salmon, or else very pale greenish-white, and the markings are either bold blotches, more or less confluent at the large end, where they are far most numerous, and only a few specks and spots towards the smaller end, or they are spots and small blotches thickly distributed over the whole surface, or they are streaky smudges forming a mottled ill-defined cap at the large end, and running down thence in streaks and spots longitudinally; in the other type the ground colour is greenish-white or pale yellowish-stone colour, and the character of the marking vary as in the preceding type. Besides these there are a few eggs with a dingy greyish-white ground, with very faint, cloudy, ill-defined spots of pale yellowish-brown pretty uniformly distributed over the whole surface. In nine eggs out of ten the markings are most dense at the large end, where they form irregular, more or less imperfect, caps or zones. A few of the eggs are slightly glossy. Of the salmon pink type some specimens in their coloration resemble eggs of *Dicrurus longicaudatus* and some of our Goat-suckers, while of those with the greenish-white ground colour some strongly recall the eggs of *Collyrio lahtora.*

In length the eggs vary from 1·0 to 1·3, and in breadth from 0·78 to 0·95; but the average of forty-four eggs is 1·17 by 0·87.

676.—*Dendrocitta himalayensis, Blyth.*

Common as is the Himalayan Tree-pie throughout the lower ranges of those mountains from which it derives its name, I personally have never taken a nest.

It breeds, I know, at elevations of from 2,000 or 6,000 feet, during the latter half of May, June, July, and probably the first-half of August.

A nest in my museum taken by Mr. Gammie in Sikhim, at an elevation of about 2,500 feet, out of a small tree, on the 30th of July, contained two fresh eggs. It was a very shallow cup, composed entirely of fine stems apparently of some kind of creeper, strongly but not at all compactly interwoven; in fact, though the nest holds together firmly, you can see through it everywhere. It is about 6 inches in external diameter, and has an egg cavity of about 4 inches wide and 1·5 deep. It has no pretence for lining of any kind.

Of another nest which he took Mr. Gammie says: "I found a nest containing three fresh eggs in a bush, at a height of about 10 feet from the ground. The nest was a very loose, shallow, saucer-like affair, some 6 or 7 inches in diameter and an inch or so in thickness, composed entirely of the dry stems and tendrils of creepers. This was at Labdah, in Sikhim, at an elevation of about 3,000 feet and the date the 14th May 1873." Later he writes:—

"This Magpie breeds in the Darjeeling District in May, June, and July, most commonly at elevations between 2,000 and 4,000 feet. It affects cleared cultivated tracts interspersed with a few standing shrubs and Bamboos in which it builds. The nest is generally placed from 6 to 12 feet from the ground in the inner part of the shrubs, and is made of pieces of creeper stems intermixed with a few small twigs loosely put together without any lining. There is scarcely any cup, merely a depression towards the centre for the eggs to rest in. Internally it measures about 4·8 in breadth by 1·5 in depth. The eggs are three or four in number.

"This is a very common and abundant bird between 2,000 and 4,000 feet, but is rarely found far from cultivated fields. It seems to be exceedingly fond of chestnuts, and, in autumn, when they are ripe, lives almost entirely on them; but at other times is a great pest in the grain fields, devouring large quantities of the grain and being held in detestation by the natives in consequence. Jerdon says 'it usually feeds on trees,' but I have seen it quite as frequently feeding on the ground as on trees."

Mr. Hodgson has two notes on the nidification of this species in Nepal:—"*May* 18*th*.—Nest, two eggs and two young; nest on the fork of a small tree, saucer-shaped, made of slender twigs twisted circularly and without lining; cavity 3·5 in diameter by 0·5 deep; eggs, yellowish-white blotched with pale olive chiefly at the larger end; young just born."

"*Jaha Powah, 6th June.*—Female and nest in forest on a largish tree placed on the fork of a branch; a mere bunch of sticks like a Crow's nest; three eggs, short and thick, fawny white blotched with fawn brown chiefly at the thick end."

Dr. Jerdon says: "I have had the nest and eggs brought me at Darjeeling frequently. The nest is made of sticks and roots, and the eggs, three or four in number, are of a pale dull greenish-fawn colour, with a few pale reddish-brown spots and blotches, sometimes very indistinct."

Captain Hutton tells us that this species "occurs abundantly at Mussoorie, at about 5,000 feet elevation, during summer, and more sparingly at greater elevations. In the winter it leaves the mountains for the Dhoon.

"It breeds in May, on the 27th of which month I took a nest with three eggs and another with three young ones. The nest is like that of *Urocissa occipitalis,* being composed externally of twigs, and lined with finer materials, according to the situation; one nest, taken in a deep glen by the side of a stream, was lined with the long fibrous leaves of the *Mare's tail* (*Equisetum*) which grew abundantly by the water's edge; another, taken much higher on the hill side and away from the water, was lined with tendrils and fine roots. The nest is placed rather low, generally about 8 or 10 feet from the ground, sometimes at the extremity of a horizontal branch, sometimes in the forks of young bushy Oaks. The eggs somewhat resemble those of *U. occipitalis,* but are paler and less spotted, being of a dull greenish-ash with brown blotches and spots somewhat thickly clustered at the larger end."

I have seen comparatively few eggs of this species. Four sent me by Mr. Gammie from Sikhim are broad regular ovals a little compressed towards one end; the shell fine but almost entirely devoid of gloss. The ground colour is yellowish-white, with more or less of an olive tinge, and the eggs are profusely blotched, streaked, clouded, and spotted with pale olive brown, purplish-brown, and very pale half washed-out inky purple. The markings are most dense in a broad zone round the large end, where they are nearly confluent.

I have also three very similar eggs of this species, for which I am indebted to Captain Hutton and three others from Native Sikhim. They closely resemble one type of the eggs of *D. rufa,* but are slightly smaller. They are moderately elongated ovals, slightly pointed towards one end. The ground colour is a pale yellowish-stone colour, with numerous brown and yellowish-brown blotches and streaks more or less confluent in a broad irregular zone at the large end, and with spots and specks of the same colour most numerous in the neighbourhood of the zone, scattered more or less thickly or thinly over the rest of the surface of the egg. There are a few pale dingy purple or neutral tint clouds underlying the zone, and a few spots of the same colour on other portions of the eggs. These specimens also are almost entirely glossless. I do not know whether rufous varieties of this bird's eggs occur as they so commonly do in those of its plains representative.

These ten eggs vary from 1·06 to 1·22 in length, and from 0·8 to 1·0 in breadth; but they average 1·13 by 0·86 nearly.

678.—*Dendrocitta leucogastra, Gould.*

From Travancore Mr. Bourdillon has kindly sent me an egg and the following note on the nidification of the Southern Tree-pie:—

"Three eggs, very hard-set, of an ashy-white colour marked with ashy and greenish-brown blotches, 1·12 long and 0·87 broad, were taken on 9th March 1873 from a nest in a bush 8 or 10 feet from the ground. The nest of twigs was built after the style of the English Magpie's nest, minus the dome. It consisted of a large platform 6 inches deep and 8 or 10 inches broad, supporting a nest 1½ inch deep and 3½ inches broad. The bird is not at all uncommon on the Assamboo Hills (*vide ante p* 298) between the elevations of 1,500 and 3,000 feet above the sea, seeming to prefer the smaller jungle and more open parts of the heavy forest."

Later he writes: "On the 8th April I found another nest containing three half-fledged Magpies (*D. leucogastra*). The nest was entirely composed of twigs, roughly but securely put together; interior diameter 3 inches and depth 2 inches, though there was a good sized base or platform, say, 5 inches in diameter. The nest was situated on the top fork of a sapling about 12 feet from the ground. I tried to rear the young birds, but they all died within a week."

The egg is very like that of our other Indian Tree-pies. It is in shape a broad and regular oval, only slightly compressed towards one end. The shell is fine and compact and is moderately glossy. The ground is a creamy stone colour. It is profusely blotched and streaked with a somewhat pale yellowish-brown, these markings being most numerous and darkest in a broad, irregular, imperfect zone round the large end, and it exhibits further a number of pale inky purple clouds and blotches, which seem to underlie the brown markings, and which are chiefly confined to the broader half of the egg. The latter measures 1·13 by 0·86.

682.—*Sturnus nitens, Hume.*

The Bright Starling (described in YARKAND TO LAHORE, p. 98) which, I understand, some ornithologists have been inclined to unite with Gould's Purple Starling (*S. purpurascens*), is a quite distinct and much smaller species than Gould's.

Our present bird breeds in Candahar, Cashmere, and the extreme north-west of the Punjab. It is the bird which Dr. Jerdon includes in his work as *S. unicolor* (a very different bird, which does not occur within our limits), and which Mr. Theobald referred to as breeding in Cashmere as *Sturnus vulgaris*, which bird does not, as far as I can learn, breed in the Valley of Cashmere, though it does in Yarkand.

The Bright Starling lays towards the end of April at Peshawur, where I found it nesting in holes in Willow trees in the cantonment compounds. In Candahar it lays somewhat earlier, and in the Valley of Cashmere somewhat later, *viz.*, in the month of May.

It builds in holes of trees, in river banks, and in old buildings and bridges, constructing a loose nest of grass and grass roots, with sometimes a few thin sticks; it is perhaps more of a lining to the hole than a true nest. It lays five or six eggs.

Mr. Brooks says: "It is like *S. unicolor*, but smaller with shorter wing and more beautiful reflections. It is excessively abundant in Cashmere, at moderate elevations, and in the valley, and breeds in holes of trees and in river banks. The eggs are like those of *S. vulgaris*, but rather smaller. The latter bird occurs plentifully in the plains of India in the cold weather, and is as profusely spotted as English specimens. The bills vary in length, and are not longer as a rule than those of the British birds. I did not meet with *S. vulgaris* in Cashmere. It appears to migrate more to the west, for it is said to be common in Afghanistan. *S. nitens* also occurs in the plains in the cold season. I have Etawah specimens. They are at that time slightly spotted, but can always be very easily distinguished from *S. vulgaris.*"

Mr. W. Theobald makes the following remark on its nidification in the Valley of Cashmere:—

"Lays in the second and third weeks of May; eggs, ovato pyriform; size, 1·15 by 0·85; colour, pale clear bluish-green; valley generally, in holes of bridges, tall trees, &c., in company with *Corvus monedula.*"

Captain Hutton records that "*S. vulgaris* remains only during the coldest months, and departs as spring approaches; whereas the present species builds in the spring at Candahar, laying seven or eight blue eggs, and the young are fledged about the first week in May."

The eggs of this species are generally somewhat elongated ovals, a good deal compressed towards one end and not uncommonly more or less pyriform. They are glossy, but in a good light have the surface a good deal pitted. They are entirely devoid of markings, and seem to have the ground one uniform very pale sea greenish-blue. They appear to vary very little in colour, and to average generally a good deal smaller than those of the Common Starling.

They vary in length from 1·02 to 1·19, and in breadth from 0·78 to 0·87; but the average of twenty eggs is 1·13 by 0·83.

683.—*Sturnopastor contra, Lin.*

The Pied Pastor breeds throughout the North-Western Provinces and Oudh, Bengal, the eastern portions of the Punjab and Rajpootana (it does not extend to the western portions nor to Sindh), the Central Provinces, and Central India.

The breeding season lasts from May to August, but the majority of the birds lay in June and July. It builds in trees, at heights of from 10 to 30 feet, usually towards the extremities of lateral branches, constructing a huge clumsy nest of straw, grass, twigs, roots, and rags, with a deep cavity lined as a rule with quantities of feathers. Occasionally, but very rarely, it places its nest in some huge hole in a great arm of a Mango tree. I have seen many hundreds of their nests, but only two thus situated.

As a rule these birds do not build in society, but at times, especially in Lower Bengal, I have seen a dozen of their nests on a single tree.

The nest is usually a shapeless mass of rubbish loosely put together, rough and ragged; in the way of nests in fact, *monstrum horrendum informe ingens,* the architect of which you would fancy was, *lumen adeptum.*

A note I recorded on one taken at Bareilly will illustrate sufficiently the kind of thing:—

"At the extremity of one of the branches of these same Mango trees, a small truss of hay, as it seemed, at once caught every eye. This was one of the huge nests of the Pied Pastor, and proved to be some 2 feet in length and 18 inches in diameter, composed chiefly of dry grass, but with a few twigs, many feathers, and a strip or two of rags intermingled in the mass. The materials were loosely put together, and the nest was placed high up in a fork near the extremity of a branch. In the centre was a well-like cavity some 9 inches deep by 3½ inches in diameter, at the bottom of which, amongst many feathers, lay four fresh eggs."

Five is the full complement of eggs, but they very often lay only four, and once in a hundred times six are met with.

From Hansie Mr. W. Blewitt writes that he "found numerous nests during May and June. They were all placed on Keekur trees, at heights of from 10 to 15 feet from the ground, the trees for the most part being situated on the banks of a canal or in the Dhana Beerh, a sort of jungle preserve.

"The nests were densely built of Keekur and Zizyphus twigs, and thickly lined with rags, leaves, and straw. Five was the greatest number of eggs that I found in any one nest."

Writing of his experience in the Delhi and Jhansi Divisions, Mr. F. R. Blewitt remarks that "the Pied Pastor breeds from June to August, making its nest between the outer branchlets of the larger lateral branches of trees, without special choice for any one kind. The nest is altogether roughly made, though some ingenuity is evinced in putting all the material of which it is composed together. Twigs, grasses, rags, feathers, &c., are all brought into requisition to form the large-made structure, which I have found, though less commonly, at a higher altitude from the ground than the 8 or 10 feet Jerdon speaks of."

The eggs are typically moderately broad ovals, a good deal pointed towards one end, but pyriform and elongated examples occur; in fact, a great number of the eggs are more or less Pear-shaped. Like those of all the members of this sub-family, the eggs are blue, spotless, and commonly brilliantly glossy. In shade they vary from a delicate bluish-white to a pure, though somewhat pale, sky blue, and not uncommonly are more or less tinged with green.

They vary in length from 0·95 to 1·25, and in breadth from 0·75 to 0·9; but the average of one hundred eggs is 1·11 by 0·82 nearly.

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683 *bis.—Sturnopastor superciliaris, Blyth.*

Of the Burmese Pied Pastor, Mr. Eugene Oates says that it is common and resident throughout the plains of the Province of Pegu. Writing from Wan he says:—

"On the 28th April, having a spare morning, I took a very large number of nests and eggs. The eggs were in various stages of incubation, but the majority were freshly laid. On May 7th I took another nest with two eggs. These were quite fresh.

"The nest is a huge cylindrical structure, about 18 inches long and a foot diameter, composed of straw, leaves, and feathers. It is placed at a height of from 10 to 25 feet from the ground, in a most conspicuous situation, generally at the end of a branch which has been broken off and where a few leaves are struggling to come out. A Bamboo bush is also a favorite site. This Mynah will, by preference, build near houses, but in no case *in* a house: it must have a tree."

The eggs which I owe to Mr. Oates are, as might be expected, very similar indeed to those of our Common Pied Pastor, but they seem to average somewhat smaller.

They are moderately broad ovals, a good deal pointed towards one end, and in some cases more or less compressed there, and slightly pyriform.

The specimens sent are only moderately glossy. In colour they vary from *very* pale bluish-green to a moderately dark greenish-blue, but the great majority are pale.

In length they vary from 1·0 to 1·1, and in breadth from 0·73 to 0·82; but the average of fifteen eggs is 1·04 by 0·77.

684.—*Acridotheres tristis, Lin.*

The Common Mynah breeds throughout the Indian Empire, alike in the plains and in the hills. A pair breed yearly in the roof of my verandah at Simla, at an elevation of 7,800 feet.

They are very domestic birds, and greatly affect the habitations of man and their immediate neighbourhood. They build in roofs of houses, holes in walls, trees, and even old wells, in the earthen chatties that in some parts the natives hang out for their use (as the Americans hang boxes for the Purple Martin), and, though *very* rarely, once in a way *on* the branches of trees.

Captain Hutton says: "This is a summer visitor in the hills, and arrives at Mussoorie with the *A. fuscus*, Wagl. It builds in the hole of a tree, which is lined with dry grass and feathers, and on no occasion have I *ever* seen a nest made on 'the branches of a tree whereon which the nest was composed of twigs and grass within' (as stated by Captain Tickell)."

But in this instance Captain Tickell may have been right, for I have once seen such a nest myself, and Mr. R. M. Adam writes: "Near Sambhur, on the 7th July, I saw a pair of this species building a large cup-shaped nest in a Babool tree," while Captain G. F. L. Marshall affirms that this species "*frequently* lays in cup-shaped nests of sticks placed in trees, like small Crows' nests."

Neglecting exceptional cases like these, the nest is a shapeless but warm lining to the hole, composed chiefly of straw and feathers, but in which fine twigs, bits of cotton, strips of rags, bits of old rope, and all kinds of odds and ends may at times be found incorporated.

The normal breeding season lasts from June to August, during which period they rear two broods; but in Ross Island (Andamans), where they were introduced some years ago, they seem to breed *all through* the year. Captain Wimberley, who sent me some of their eggs thence, remarks: "The bird is now very common here. As soon as it has cleared out one young brood, it commences building and laying again. This continues all the year round."

I think this great prolificness may be connected with the uniformly warm temperature of these islands and the great heat of the sun there all through the year rendering much incubation unnecessary. Even in the plains of Northern India in the hot weather when they breed these birds do not sit close, and since at the Andamans the weather is such all the year round that the eggs almost hatch themselves, this may be partly the reason why these birds have so many more broods there than with us, where, for at least half the year, constant incubation would be necessary. I particularly noticed when at Bareilly how very little trouble these Mynahs sometimes took in hatching their eggs, and I may quote what I then recorded about the matter:—

"In a nest in the wall of our verandah we found four young ones. This was particularly noteworthy, because from my study window the pair had been watched for the last month, first courting, then flitting in and out of the hole with straws and feathers, ever and anon clinging to the mouth of the aperture, and laboriously dislodging some projecting point of mortar; then marching up and down on the ground, the male screeching out his harsh love song, bowing and swelling out his throat all the while, and then rushing after and soundly thrashing any chance Crow (four times his weight at least) that inadvertently passed too near him; never during the whole time had either bird been long absent, and both had been seen together daily at all hours. I made certain that they had not even begun to sit, and behold there were four fine young ones a full week old chirping in the nest. Clearly these birds are not close sitters down here, but I well remember a pair at Mussoorie, some 6,000 feet above the level of the sea, the most exemplary parents, one or other being on the eggs at all hours of the day and night. The morning's sun beats full upon the wall in the inner side of which the entrance to the nest is; the nest itself is within 4 inches of the exterior surface; at 11 o'clock the thermometer gave 98° as its temperature. I have often observed in the river Terns *(Seena aurantia, Rhynchops albicollis, Sterna javanica)* and Pratincoles *(Glareola lactea)*, who lay their eggs in the bare white glittering river sands, that so long as the sun is high and the sand hot they rarely sit *upon* their eggs, though one or other of the parents constantly remains beside or hovering near and over them, but in the early morning, in somewhat cold and cloudy days, and as the night draws on, they are all close sitters. I suspect that instinct teaches the birds that, when the natural temperature of the nest reaches a certain point, any addition of their body heat is unnecesary, and this may explain why during the hot days, (when we alone noticed them,) in this very hot hole, the parent Mynahs spent so little of their time in the nest whilst the process of hatching was going on."

They lay indifferently four or five eggs. I have just as often found the former as the latter number, but I have never yet met with more.

The eggs, which are larger than those of either *S. contra* or *A. ginginianus*, in other respects resemble these eggs greatly, but when fresh are, I think, on the whole, of a slightly darker colour. They are rather long, oval, often pear-shaped, eggs, spotless and brilliantly glossy, varying from very pale blue to pure sky or greenish blue.

In length they vary from 1·05 to 1·28, and in breadth from 0·8 to 0·95; but the average of ninety-seven eggs is 1·19 by 0·86.

685.—*Acridotheres ginginianus, Lath.*

The Bank Mynah breeds throughout the North-West Provinces and Oudh, Behar, and Central Bengal, the greater portion of the Central Provinces, and the Punjab and Sindh. Adams says it does not *occur* in the Punjab; but as Captain C. H. T. Marshall correctly pointed out to me years ago, and I have verified the facts, it breeds about Lahore and many other places, and in the high banks of the Beas, the Sutlej, the Jhelum, and the Indus, congregating in large numbers on these rivers just as it does on the Jumna or the Ganges.

It builds exclusively, so far as my experience goes, in earthen banks and cliffs, in holes which it excavates for itself, always, I think, in close proximity to water, and by preference in places overhanging or overlooking running water.

The breeding season lasts from the middle of April to the middle of July, but I have found more eggs in May than in any other month.

Four is the usual number of the eggs; I have found five, but never more. If Theobald got seven or eight, they belonged to two pairs, and the nests so run into each other that this is a mistake that might easily be made, even where coolies were digging into the bank before one.

There is really no variety in their nesting arrangements, and a note I recorded in regard to one colony that I robbed will, I think, sufficiently illustrate the subject. All that can be said is that very commonly they nest low down in earthy cliffs, where it is next to impossible to explore thoroughly their workings, while in the instance referred to these were very accessible:—

"One morning driving out near Bareilly we found that a colony of the Bank Mynah had taken possession of some fresh excavations on the banks of a small stream. The excavation was about 10 feet deep, and in its face, in a band of softer and sandier earth than the rest of the bank, about a foot below the surface of the ground, these Mynahs had bored innumerable holes. They had taken no notice of the workmen who had been continuously employed within a few yards of them, and who informed us that the Mynahs had first made their appearance there only a month previously. On digging into the bank we found the holes all connected with each other, in one place or another, so that apparently every Mynah could get into or out from its nest by any one of the hundred odd holes in the face of the excavation. The holes averaged about 3 inches in diameter, and twisted and turned up and down, right and left, in a wonderful manner; each hole terminated in a more or less well marked bulb (if I may use the term), or egg chamber, situated from 4 to 7 feet from the face of the bank. The egg chamber was floored with a loose nest of grass, a few feathers, and, in many instances, scraps of snake skins.

"Are birds superstitious, I wonder? Do they believe in charms? If not, what induces so many birds that build in holes in banks to select out of the infinite variety of things, organic or inorganic, pieces of snake skin for their nests? They are at best harsh, unmanageable things, neither so warm as feathers, which are ten times more numerous, nor so soft as cotton or old rags, which lie about broadcast, nor so cleanly as dry twigs and grass. Can it be that snakes have any repugnance to their "worn out weeds," that they dislike these mementos of *their* fall*, and that birds which breed in holes into which snakes are likely to come by instinct select these exuviæ as scare-snakes?

"In some of the nests we found three or four callow young ones, but in the majority of the terminal chambers were four, more or less, incubated eggs.

"I noticed that the tops of all the mud pillars, (which had been left standing to measure the work by,) had been drilled through and through by the Mynahs, obviously not for nesting purposes as not one of them contained the vestige of a nest, but either for amusement or to afford pleasant sitting places for the birds not engaged in incubation. Whilst we were robbing the nests, the whole colony kept screaming and flying in and out of these holes in the various pillar tops in a very remarkable manner, and it may be that after the fashion of Lap-wings they thought to lead us away from their eggs and induce a belief that their real homes were in the pillar tops."

Captain G. F. L. Marshall remarks: "This species breeds in the Boolundshahur District in June and July. It makes its nest in a hole in a bank, but more often in the side of a kucha or earthen well. A number of birds generally breed in company. The nest is formed by lining the cavity with a little grass and roots and a few feathers. On the 8th July I found a colony breeding in a well near Khoorjah, and took a dozen fresh eggs."

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* "When the snake," says an Arabic commentator, "tempted Adam, it was a winged animal. To punish its misdeeds the Almighty deprived it of wings, and condemned it thereafter to creep for ever on its belly, adding, as a perpetual reminder to it of its trespass, a command for it to cast its skin yearly."

The eggs are typically, I think, shorter and proportionately broader than those of other kindred species already described; very pyriform varieties are, however, common. They are as usual spotless, very glossy, and of different shades of very pale sky and greenish blue. Although, when a large series of the eggs of this and each of the preceding species are grouped together, a certain difference is observable, individual eggs can by no means be discriminated, and it is only by taking the eggs with one's own hands that one can feel certain of their authenticity.

In length they vary from 0·95 to 1·16, and in breadth from 0·72 to 0·87; but the average of forty-seven eggs is 1·05 by 0·82.

686.—*Acridotheres fuscus, Wagl.*

The Jungle Mynah eschews the open cultivated plains of Upper, Central, and Western India. It breeds throughout the Himalayas, at any elevations up to 7,000 feet, where the hills are not bare, and in some places in the sub-Himalayan jungles. It breeds in the plains country of Lower Bengal, and in both plains and hills of Assam, Cachar, and Burmah,* and also in great numbers in the Nilghiris and all the wooded ranges and hilly country of the Peninsula. The breeding season lasts from March to July, but the majority lay everywhere, I think, in April, except in the extreme north-west, where they are later.

Normally, they build in holes of trees, and are more or less social in their nidification. As a rule, if you find one nest you will find a dozen within a radius of 100 yards, and not unfrequently within one of ten yards. But, besides trees, they readily build in holes in temples and old ruins, in any large stone wall, in the thatch of old houses, and even in their chimneys.

The nest is a mere lining for the hole they select, and varies in size and shape with this latter; fine twigs, dry grass, and feathers are the materials most commonly used, the feathers being chiefly gathered together to form a bed for the eggs; but moss, moss and fern roots, flocks of wool, lichen, and down may often be found in greater or less quantities intermingled with the grass and straw which forms the main body, or with the feathers that constitute the lining, of the nest. I have never found more than five eggs, but Miss Cockburn says that they sometimes lay six.

From Murree Captain C. H. T. Marshall writes: "This Mynah, which takes the place of *A. tristis* in the higher hills, breeds always in holes in trees. We found five or six nests in June and early in July."

They breed near Solan, below Kussowlee, and close to Jerripani, Captain Hutton's place below Mussoorie, in both which localities I have taken their nests myself.

Captain Hutton remarks: "This is a summer visitant in the hills, and is common at Mussoorie during that season; but it does not appear to visit Simla, although it is to be found in some of the valleys below it to the south. It breeds at Mussoorie in May and June, selecting holes in the forest trees, generally large Oaks, which it lines with dry grass and feathers. The eggs are from three to five, of a pale greenish-blue, shape ordinary, but somewhat inclined to taper to the smaller end. This species usually arrives from the valleys of the Dhoon about the middle of March; and, until they begin to sit on their eggs, they congregate every morning and evening into small flocks, and roost together in trees near houses; in the morning they separate for the day into pairs, and proceed with the building of nest or laying of eggs. After the young are hatched and well able to fly, all betake themselves to the Dhoon in July.

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* The Burmese Race however, is not typical *fuscus*, but more or less intermediate between this and the more Eastern representative species?

In Kumaon I found them breeding near the Ramghur Iron-works, and, writing from Nynee Tal, Captain G. F. L. Marshall says that they "breed very commonly at Bheem Tal (4,000 feet), but I have not noticed them at Nynee Tal. I took a great many eggs; they were all laid in holes in rotten trees of a height of 2 to 8 feet from the ground; they average much smaller than the eggs of *A. tristis,* but are similar in colour."

At Dacca Colonel Tytler found them nesting in temples and houses about the sepoy lines.

"In the Nilghiris," writes Mr. Wait, "the Jungle Mynah's eggs may be found at any time from the end of February to the beginning of July. They nest in chimneys, hollow trees, holes in stone walls, &c., filling in the hole with hay, straw, moss, and twigs, and lining the cavity with feathers. They lay from three to five long, oval, greenish-blue eggs, a shade darker than those of the English Starling."

From Kotagherry Miss Cockburn tells us that "these Mynahs breed in the months of March and April, and construct their nests (which consist of a few straws, sticks, and feathers put carelessly together) in the holes of trees and old thatched houses. They lay five or six eggs of a beautiful light blue, and are extremely careful of their young. The nests of these birds are so common in the months above mentioned that herd boys have brought me more than fifty eggs at a time.

"About a year ago a pair took up their abode in my pigeon-cot, and though the eggs were often destroyed they would not leave the place, but continued to lay in the same nest. At last one of them was caught, the other went away, but returned the next day accompanied by a new mate. At length the hole was shut up, as they committed great depredations in the garden, and were useful only in giving a sudden sharp cry of alarm when the Mhorunghee Hawk Eagle, a terrible enemy to pigeons, made its appearance, thus enabling the gardeners to balk him of his intended victim."

Dr. Jerdon states that "it is most abundant on the Nilghiris, where it is a permanent resident, breeding in holes in trees, making a large nest of moss and feathers, and laying three to five eggs of a pale greenish-blue colour."

The eggs of this species, which I have from Mussoorie, Dacca, Kumaon, and the Nilghiris, approximate closer to those of *A. tristis* than to those of *A. ginginianus.* They are rather long ovals, somewhat pointed usually but often pyriform. They are perhaps, as a rule, somewhat paler than those of either of the above-named species, and are of the usual spotless glossy type, varying in colour from that of skimmed milk to pale blue or greenish-blue. Typically, I think, they are proportionally more elongated and attenuated than those either of *tristis, ginginianus,* or *contra.*

In length they vary from 1·03 to 1·31, and in breadth from 0·78 to 0·88; but the average of forty eggs is 1·19 by 0·83.

687.—*Temenuchus pagodarum, Gmel.*

The Pagoda or Black-headed Mynah breeds throughout the more open, dry, and well wooded or cultivated portions of India. In Sindh and in the more arid and barren parts of the Punjab and Rajpootana on the one hand, or in the more humid and jungly localities of Lower Bengal on the other, it occurs, if at all, merely as a seasonal straggler. How Adams, quoted by Jerdon (Vol. II, p. 330), could say that he never saw it in the plains of the North-West Provinces (where, as a matter of fact, it is one of our commonest resident species) altogether puzzles me.

Neither in the north nor in the south does it appear to ascend the hills or breed in them at any elevations exceeding 3,000 or 4,000 feet.

The breeding season lasts from May to August, but in Upper India the great majority lay in June.

According to my experience in Northern India it nests exclusively in holes in trees. Dr. Jerdon says that "at Madras it breeds about large buildings, pagodas, houses, &c." This is doubtless correct, but has not been confirmed as yet by any of my Southern Indian correspondents, who all talk of finding its nest in holes of trees.

The hole is thinly lined with a few dead leaves, a little grass, and a few feathers, and occasionally with a few small scraps of some other soft material.

They lay from three to five eggs.

From Hansie Mr. W. Blewitt writes: "During June and the early part of July I found numerous nests of this species in holes of Shishum, Peepul, Neem, and Siriss trees situated on the bank of the Hissar Canal. The holes were at heights of from 12 to 15 feet from the ground, and in each a few leaves or feathers were laid under the eggs. Five was the greatest number found in any one hole."

Recording his experience in the Delhi, Jhansi, and Saugor Divisions, Mr. F. R. Blewett tells us that the Pagoda Mynah breeds from May to July, building its nest in holes of trees, selecting where possible those most inaccessible. I have always found the nest in the holes of Mango, Tamarind, and high growing Jamún trees. Feathers and grass, sometimes an odd piece of rag, are loosely placed at the bottom of the hole, and on these the eggs repose.

"The eggs are pale bluish-green, and from four to five form the regular number. I may add that only on one occasion did I obtain five eggs in a nest."

"In Oudh," writes Mr. R. M. Adam, "I took one nest of this species, in a hole in a mango tree, on the 5th May, containing five eggs."

Mr. A. G. R. Theobald notes that "early in August I found a nest of *T. pagodarum* at Ahtoor, the hill station on the Shevaroys. It was down in the inside of a partly hollow Nut tree log, attached to a scaffolding, about 2½ feet down and, say, 35 feet from the ground, and was composed of dry leaves and a few feathers. It contained three fresh eggs."

The eggs are smaller than those of any of the preceding species, are more perfect ovals, and as a body much paler. The shells, too, are, I think, finer and more fragile. They are, of course, glossy and spotless, and the colour varies from very pale bluish-white to pale blue or greenish-blue. I have never seen an egg of this species of the full clear sky blue often exhibited by those of *tristis*, *contra*, and *ginginianus*.

The eggs vary in length from 0·86 to 1·15, and in breadth from 0·66 to 0·8; but the average of fifty-four eggs is 0·97 by 0·75.

688.—*Temenuchus malabaricus*, *Gmel.*

I have never met with the nest of the Grey-headed Mynah myself, but am indebted to Mr. Gammie for its eggs and nest. That gentleman says: "I obtained a nest of this species near Mongphoo (14 miles from Darjeeling), at an elevation of about 3,400 feet. The nest was in the hollow of a tree, and was a shallow pad of fine twigs with long strips of bark intermingled in the base of the structure, and thinly lined with very fine grass stems. The nest was about 4 inches in diameter and less than 1½ inch in height exteriorly, and interiorly the depression was perhaps half an inch deep. It contained four hard-set eggs."

This year he writes to me: "The Grey-headed Mynah breeds about Mongphoo, laying in May and June. I have taken several nests now, and I found that they prefer cleared tracts where only a few trees have been left standing here and there, especially on low but breezy ridges, at elevations of from 2,500 to 4,000 feet. They always nest in natural holes of trees both dead and living, and at any heights from 20 to 50 feet from the ground. The nest is shallow, principally composed of twigs put roughly together in the bottom of the hole. They lay four or five eggs.

"The Grey-headed Mynah is not a winter resident in the hills. It arrives in early spring and leaves in autumn. It is very abundant on the outer ranges of the Teesta Valley and is generally found in those places frequented by *Artamus fuscus*. It feeds about equally on trees and on the ground, and a flock of 40 or 50 feeding on the ground in the early morning is no unusual sight."

The eggs vary a good deal in shape: some are broad and some are elongated ovals, but all are more or less pointed towards the small end; the shell is very fine and delicate, and rather glossy; the colour is a very delicate pale sea green, without any markings of any kind. They vary from 0·89 to 1·0 in length, and from 0·69 to 0·73 in breadth; but the average of ten eggs is 0·93 by 0·7.

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690 *quat.—Calornis Tytleri, Hume.*

Of Tytler's Tree-stare Mr. Davison remarks that "it is a permanent resident at the Nicobars, breeding in holes in trees and in the decayed stumps of old Cocoanut palms, apparently from December to March. At the Andamans it is much less numerous, and is only met with in pairs or in small parties, frequenting the same situations as it does in the Nicobars."

691.—*Saroglossa spiloptera, Vig.*

Personally I know nothing of the nidification of the Spotted-winged Stare.

Captain Hutton tells us that "this species arrives in the hills about the middle of April in small parties of five or six, but it does not appear to ascend above 5,500 to 6,000 feet, and is therefore more properly an inhabitant of the warm valleys. I do not remember seeing it at Mussoorie, which is 6,500 to 7,000 feet, although at 5,200 feet on the same range it is abundant during

Summer. Its notes and flight are very much those of the Starling (*Sturnus vulgaris*), and it delights to take a short and rapid flight and return twittering to perch on the very summit of the forest trees. I have never seen it on the ground, and its food appears to consist of berries.

"Like the two species of *Acridotheres* it nidificates by itself in the holes of trees, lining the cavity with bits of leaves. The eggs are usually three, or sometimes four or five, of a delicate pale sea green speckled with blood-like stains, which sometimes tend to form a ring near the larger end; shape oval, slightly tapering."

The eggs are so different in character from those of all the immediately preceding species that doubts might reasonably arise as to whether this species is placed exactly where it ought to be. I possess at present only three eggs of this bird, which I owe to Captain Hutton. They are decidedly long ovals, much pointed towards the small end, and in their shape and coloration not a little recall those of *Myiophoneus Temminckii*. The eggs are glossless, of a greenish or greyish white ground, more or less profusely speckled and spotted with red, reddish-brown, and dingy purple. In two of the eggs the majority of the markings are gathered into a broad, irregular, speckled zone round the large end. In the third egg there is just a trace of such a zone and no markings at all elsewhere. In length they vary from 1·03 to 1·08, and in breadth from 0·68 to 0·74.

692.—*Eulabes religiosa, Lin.*

The Southern Hill Mynah is another species in regard to which further information is much required.

Mr. Bourdillon, writing from Travancore, gives me the following account of the eggs. He says: "This bird, an abundant resident, lays a blue egg pretty evenly marked with brown spots, some light and some darkish, in a nest of straw and feathers in a hole of a tree generally a considerable height from the ground.

"I have only taken one nest, which contained a single egg slightly set, on 23rd March 1873, the egg measuring 1·37 long and 0·87 broad."

Later Mr. Bourdillon says: "Since writing the foregoing I took on 21st April two fresh eggs from the nest of a Southern Hill Mynah (*Eulabes religiosa*). The nest was of grass, feathers, and odds and ends in a hole in a Nânga (*Mesua coromandeliana*) stump, about 25 feet from the ground. The eggs of this Mynah are blue, with purplish and more decided brown spots.

"I am *positive* as to the identity of the egg. Both the eggs taken last year and the two taken the other day were obtained under my personal supervision. In both instances I watched the birds building, and when we robbed the nests saw the female fly off them."

These two eggs sent me by Mr. Bourdillon are very beautiful. In shape they are very gracefully elongated ovals; the shell is very fine and smooth, but has only a rather faint gloss. The ground colour is a delicate pale sea green or greenish-blue, and the eggs are more or less profusely spotted or splashed, with purplish, or in some spots, chocolate brown, and a very pale purple, which looks more like the stain that might be supposed to be left by one of the more decided coloured markings, that had been partially washed out, than any thing else.

The eggs measure 1·37 by 0·9 and 1·35 by 0·87.

693.—*Eulabes javanensis, Osbeck.*

The Larger Hill Mynah, under which name I include both *andamanensis*, Tytler, and *intermedia*, Hay (*vide* STRAY FEATHERS, Vol. II, p. 254), as well as *javanensis*, breeds, I know, in the Nepal Terai and in the Kumaon Bhabur; and many are the young birds that I have seen extracted by the natives out of holes, high up in large trees, in the old anti-mutiny days when we used to go tiger shooting in these grand jungles. I never saw the eggs however, which, I think, must have all been hatched off in May when we used to be out.

"In the Andamans," writes Davison, "they breed in April and May, building a nest of grass, dried leaves, &c., in holes of trees."

He also, however, never took the eggs.

693 *sex.—Ampeliceps coronatus, Blyth.*

Of the nidification of this beautiful species, the Gold-crest Grackle, we possess but little information. My friend Mr. Davison, who has secured many specimens of the bird, writes: "On the 13th April 1874, 2 miles from the town of Tavoy, on a low range of hills about 200 feet above the sea-level, I found a nest of the Gold-crest Grackle. The nest was about 20 feet from the ground in a hole in the branch of a large dry tree. It was composed entirely of coarse dry grass, mixed with dried leaves, twigs, and bits of bark, but contained no feathers, rags, or such substances as are usually found in the nests of the other Mynahs. The nest contained three young ones only a day or two old."

694.—*Ploceus baya, Blyth.*

So much has been written about the nidification of the Baya, that I need scarcely add to the existing literature of the subject. I will first quote Dr. Jerdon's most admirable account.

Dr. Jerdon says: "The Baya breeds during the rains, according to locality, from April to September, but I am not aware if they have more than one brood. Its long retort-shaped nest is familiar to all, and it is indeed a marvel of skill, as elegant in its form, as substantial in its structure, and weather-proof against the downpour of a Malabar or Burmese monsoon.

"It is very often suspended from the fronds of some lofty palm tree, either the Palmyra, Cocoanut or Date, but by no means so universally as

Mr. Blyth would imply; for a Babool or other tree will often be selected in preference to a palm growing close by, as I have seen within a few miles from Calcutta on the banks of the canal. Very often a tree overhanging a river or tank, or even a large well, is chosen, especially, as Tickell says, if it have spreading branches and scanty foliage. In India I have never seen the Baya suspend its nest except on trees, but in some parts of Burmah, and more particularly in Rangoon, the Bayas usually select the thatch of a bungalow to suspend their nests from, regardless of the inhabitants within. In the cantonment of Rangoon very many bungalows may be seen with twenty, thirty, or more of these long nests hanging from the end of the thatched roof; at one house in which I was an inmate a small colony commenced their labours towards the end of April, and in August when I revisited that station there were above one hundred nests attached all round the house! In India, in some localities, they appear to evince a partiality to the neighbourhood of villages and dwellings; in other places they nidificate in the most retired spots in the jungle, or in a solitary tree in the midst of some large patch of rice cultivation.

"The nest is frequently made of grass of different kinds plucked when green, sometimes of strips of plantain leaf, and not unfrequently of strips from the leaves of the Date palm or Cocoanut; and I have observed that nests made of this last material are smaller and less bulky than those made with grass, as if the little architects were quite aware that with such strong fibre a less amount of material was necessary. The nest varies much in the length both of the upper part, or support, and the lower tube, or entrance; the support is generally solid from the point whence it is hung for 2 or 3 inches, but varies much both in length and strength. When the structure has advanced to the spot where the birds have determined the egg compartment to be, a strong transverse loop is formed, not in the exact centre but a little at one side. If then taken from the tree and reversed, the nest has the appearance of a basket with its handle, but less so in this than in the next two species, which have seldom any length of support above. Various authors, &c., described this loop or bar as peculiar to the male nest or setting nest, whereas it exists primarily in all, and is simply the point of separation between the real nest and the tubular entrance, and being used as a perch both by the old birds and the young (when grown sufficiently) requires to be very strong. Up to this time both sexes have worked indiscriminately; but when this loop is completed, the female takes up her seat on it, leaving the cock bird to fetch more fibre and work from the outside of the nest whilst she works on the inside, drawing in the fibres pushed through by the male, and re-inserting them in their proper place and smoothing all carefully. Considerable time is spent in completing this part of the nest, the egg chamber being formed on one side of the loop, and the tubular entrance on the other, after which there appears to be an interval of rest. It is at this stage of the work, from the formation of the loop to the time that the egg compartment is ready, that the lumps of clay are stuck on, about which there are so many conflicting theories. The original notion, derived entirely, I believe, from the natives, was that the clay was used to stick fire-flies on to light up the apartment at night. Layard suggests that the bird uses it to sharpen its bill on: Burgess that it serves to strengthen the nest. I, of course, quite disbelieve the fire-fly story, and doubt the other two suggestions. From an observation of several nests, the times at which the clay was placed in the nests, and the position occupied, I am inclined to think that it is used to balance the nest correctly, and to prevent its being blown about by the wind. In one nest lately examined there was about 3 ounces of clay in six different patches. It is generally believed that the unfinished nests are built by the male for his own special behoof, and that the pieces of clay are more commonly found in it than in the complete nests. I did not find this the case at Rangoon, where my opportunities of observing the bird were good, and believe rather that the unfinished nests are either rejected from some imperfect construction, weak support, or other reason, if built early in the breeding season, or if late that they are simply the efforts of that constructive faculty which appears at this season to have such a powerful effect on this little bird, and which causes some of them to go on building the long tubular entrance long after the hen is seated on her eggs.

"I have generally found that the Baya lays only two eggs, which are long, cylindrical, and pure white; but other observers record a larger number. Sundeval states that he found three in one nest: Layard says from two to four: Burgess six to eight: Tickell six to ten. Blyth thinks that four or five is the most usual number. From my observations I consider two to be the usual number, but have found three occasionally. In those exceptional instances where six or more eggs have been found, I imagine they must have been the produce of more than one bird. The Baya is stated not to use the same nest for two years consecutively, and this I can quite understand without having actually observed it."

I can entirely endorse this excellent account, and I would only add that, sometimes in Southern India, they construct the nest entirely of *coir*, these being the handsomest nests made by this species. With Dr. Jerdon I am perfectly convinced that two is the normal number of the eggs. I have certainly examined an hundred nests and *never* found more than three, and only two or three times more than two. The majority of the birds lay, I believe, everywhere in August; though Dr. Jerdon does not state it explicitly, it is, I believe, a fact that this bird *always* breeds in society. I have never found less than ten nests together, and often of course there are more than ten times that number.

The same nests are at times used during a second season. I have myself once or twice seen birds busy patching up old nests, (the difference in the colour of the fresh grass being conspicuous,) whilst others were building new ones on the same tree. Whether the *same* or a *different* colony return to do this I cannot say.

In very fine nests of the ordinary type the tapering suspensory portion will reach one foot in length. The bulb will be 7 inches in length and about 5½ inches in diameter one way and 4 inches the other, while the long tubular entrance that the male often goes on building after the female is sitting reaches in one specimen I have preserved to a length of 11 inches, with a diameter of barely 2 inches; and how the birds shoot perpendicularly up these with closed wings as easily as they do without running their heads through the top of the bulb, with the impetus they have acquired, and without even (apparently) shaking the nest, is marvellous. As a rule, these entrance passages do not exceed 6 inches in length.

The birds sit very close. One day driving out during the rains at Mynpooree, my eye was caught by a particularly fine nest hanging amongst some twenty others in a Keekur tree. I made one of my people climb the tree and bring the nest carefully down, cutting the slender twig from which it was suspended. The nest was laid at the bottom of my waggonette, and on our arrival at home hung from one of the antlers of the many stags' horns that in those days adorned my dining-room. Three days later we became aware of a very unpleasant odour: it was traced to this nest after some search, and on taking it down I found to my horror a female Baya dead upon two dead half-hatched chicks. There are not many birds that would have thus stuck to their nests and died on their eggs sooner than leave them.

The late Mr. Horne recorded an interesting note on the breeding of this species which I also quote:—

"This morning (July 7th, 1865) as I passed our solitary Palm tree, *(Phœnix dactylifera,)* in the field, I heard a strange twittering overhead, and looking up saw such a pretty sight that I shall never forget it.

"In this tree hung some thirty or forty of the elegantly formed nests of woven grass of the Baya bird so well known to all. The heavy storms of May and June had torn away many and damaged others, so as to render them, as one would think, past repair; not so thought the birds, for a party of about sixty had come to set them all in order.

"The scene in the tree almost baffles description. Each bird and his mate thought only of their own nest. How they selected it I know not, and I should like much to have seen them arrive. I suppose the sharpest took the best nest, for they varied much in condition. Of some of the nests two-thirds remained, whilst others were very nearly all blown away. Some of the birds attempted to steal grass from other nests, but generally got pecked away.

"As the wind was blowing freshly the nests swung about a good deal, and it was pretty to see a little bird fly up in a great hurry with a long bit of grass in his beak. He would sit outside the nest, holding on by his claws with the grass under him. He would then put the right end into the nest with his beak, and the female inside would pull it through and put it out for him again; and thus the plaiting of the nest went on. All this was done amidst tremendous chattering, and the birds seemed to think it great fun. When a piece was used up one would give the other a peck, and he or she would fly off for more material, the other sitting quietly till the worker returned. Nests in every stage of building afforded every position for the bird, who seemed at home in all of them.

"*July* 11*th*, 1865.—To-day I noticed that nearly all the nests had been repaired, and the birds were more scattered, either helping themselves to my Jowar *(Sorghum vulgare)* in the field or collecting insects.

"*July* 20*th*.—I observed some eight or ten newly-built nests on the ground under the tree, which I believe to have been deliberately cut off from their supports by the thievish Striped Squirrels *(Sciurus palmarum)* for use by them in their nests. Some of these had unbroken eggs in them.

"*August* 18*th*.—Noticed to-day how the birds obtain their grass. The little bird alights at the edge of the high strong Sarpat grass (*Andropogon euripeta?*) with its head down, and bites through the edge to the exact thickness which it requires. It then goes higher up to the same blade of grass, and having considered the length needed bites through it again. It then seizes it firmly at the lowest notch and flies away. Of course the strip of grass tears off and stops at the notch. It then flies along with the grass streaming behind it. As the edge of the grass is much serrated, the bird has to consider and pass it through the work the right way. This serration renders it so difficult to pull a nest to pieces, and makes the same nest last for years.

"In some instances the male continues to build for amusement after the nest is finished, not only elongating the tubular entrance, but also making a kind of false nest.

"Before the colony ceased building there were more than seventy nests in the tree."

A good deal has been written about the nidification of the Baya, which is more curious than true.

One gentleman, for instance, says: "One bird I observed commencing its nest from the bottom, resting it on a twig having plenty of leaves!!!"

The notes of admiration are mine, and it is not too much, I think, to say that this gentleman ought to have used spectacles. Numbers of notes on the nidification of the Baya have been kindly sent me, some very good and full ones, but I think Dr. Jerdon's and Mr. Horne's, which I have quoted, contain all that need be said on the subject.

The eggs of this species, like those of all the others of this group with which I am acquainted, are of a pure, dead, glossless white. They vary a good deal in size and shape, but are typically rather long ovals, a good deal pointed towards the small end. Long ovals pointed at both ends and blunt pyriform varieties are common.

The eggs vary in length from 0·72 to 0·9, and from 0·52 to 0·62; but the average of forty eggs is 0·82 by 0·59.

695—*Ploceus manyar*, *Horsf.*

The Striated Weaver Bird, which Dr. Jerdon says does not occur in the North-West Provinces, is pretty common *in suitable localities* throughout the Indian Empire, except perhaps in the southern portion of the Indian Peninsula. It is, however, only where large pieces of water, or rivers whose banks are fringed with reed and rush, occur that it breeds. There are places in the Etawah, and Mynpooree Districts, and again in Sindh, arid as these localities as a whole are, where nevertheless finding suitable rushy, reedy cover it breeds in great numbers. In one dhand in Upper Sindh I found nearly one hundred old nests in a small bulrush island not 20 yards in diameter.

They lay throughout Upper India in August and September. The nests much resemble those of *P. baya.*

They are formed of the same materials and woven in the same manner, but the upper or body portions are more massive and clumsier and the tubes are shorter. The points of some forty or fifty narrow bulrush leaves are commonly gathered together and incorporated into the upper portion of the nest to form a point of suspension. The true nest, exclusive of the tubular or entrance passage, averages about 7½ inches in length externally, with a diameter of 5 inches one way by 4 inches the other. The tube is from 2 to 4 inches in length and about 2½ inches external diameter. The upper portion of the nest may be about 1¼ inch thick, but the sides average about half an inch, and the entrance passage is scarcely one-fourth of an inch thick. What gives the nest a clumsy appearance is that the upper end of the nest terminates squarely instead of tapering more or less to a point, as is almost always the case in those of *P. baya;* but then the nests of these latter are hung from one point of support, and not as in this species from a whole clump or cluster of supports. In outline, seen from one point of view, these nests are like a very short handled meat-chopper, the tubular entrance standing for the handle.

They lay usually two or three eggs, quite as often three as two, but I myself have never taken more.

From Etawah Mr. Brooks writes: "On the 28th August 1869 I found a nest belonging to a pair of these birds. It was built among some high reeds or bulrushes, which fringed one of the tanks at the side of the railway at Jheenjuck Jheel. The nest was fixed to two or three of the reeds near their summits, and was shaped like that of *P. baya* but not so long, and as yet there was no lower tubular entrance. A former nest had been built and abandoned as a colony of black ants had taken possession of it. When I found the second nest the birds were busy building it, and it was nearly finished. As yet no eggs had been laid."

Again: "On the 4th September 1869 I found many nests in different reed beds of Jheenjuck Jheel. Several pairs had young, but out of one nest I obtained three tolerably fresh eggs which precisely resemble those of *P. baya* both in size, shape, and colour. Many of the nests found to-day had very long tubular entrances, longer even than the longest I have seen of *P. baya*. The body of the nest appears, however, to be generally smaller. Several of the reeds are drawn together, and from this junction the nest hangs."

Captain G. F. L. Marshall says that this species "breeds commonly in the grass along the banks of the Ganges Canal in the Aligurh, Mynpoorie, and Cawnpoor Districts. It is a gregarious breeder, and the nests are found in numbers together, though somewhat local. The eggs are pure white: the nest is square topped, woven into the reeds or grass."

Dr. Jerdon states that this species "invariably breeds among high reeds, and usually in places liable to be inundated; and as the breeding season is during the rains, the nest is thus unassailable except from the water. The nest is fixed to two or three reeds not far from their summit, and the upper leaves are occasionally turned down and used in the construction of the nest, which is, in all cases that I have seen, made of grass only. The nest is non-pensile, that is to say, it is fixed directly to the reeds without the upper pensile support that the nest of the last species has; and in some cases the eggs are laid before any tubular entrance is made, a hole at the side near the top forming the entrance. This, however, is often, but not always, completed during the incubation of the female; and in other cases a short tubular entrance is made at first, in a very few prolonged to a foot or more. I have found the eggs in this case, as in the last, to be generally two in number, three in a few, and in one nest I found five."

The eggs of this species seem to average slightly smaller than those of *P. baya*, but in every other respect they are precisely similar; moderately broad ovals, a good deal pointed towards one end, and of a perfectly pure, almost entirely glossless, white. The texture is very fine and compact, and the shells, though thin, are firm and strong.

In length the eggs vary from 0·73 to 0·85, and in breadth from 0·5 to 0·65; but the average of the only ten eggs I have by me is barely 0·8 by 0·58.

696.—*Ploceus bengalensis, Lin.*

I have never found the nest of the Black-throated Weaver bird. I have shot the bird in the same localities (*e. g.*, Sindh) as the last, but cannot tell whether it breeds in all of these.

Dr. Jerdon says: "I found it abundant near Purneah, also in Dacca, building in low bushes, in a grassy *chur* overflown during the rains. The nest was non-pensile, and had either no tubular entrance, or a very short one made of grass and more slightly interwoven than either of the others. Though a good many pairs were breeding in the neighbourhood, the nests were in no instance close to each other, rarely indeed two in the same bush."

696 *ter.—Ploceus hypoxanthus*, *Daud.*

There is no doubt that a Yellow-breasted Weaver-bird that we at present identify with the above species, and which is quite distinct from all the four species we have in India, (which we identify as *baya*, Blyth, *megarhunchus*, Hume, *manyar*, Horsf., and *bengalensis*, Lin.,) breeds abundantly almost throughout British Burmah, but we have hitherto had no details of its nidification.

Dr. Jerdon only tells us that it is "frequent in swampy ground near the mouth of the Rangoon River, where I also found its nest, solitary, in a thick thorny bush very similar to that of *P. bengalensis*.

Writing from the Pegu Plains in the neighbourhood of Wan, Mr. Eugene Oates remarks: "This species breeds very abundantly in this neighbourhood; on the 25th of July I took a great number of the nests and found that most of them contained two eggs, but some few of them only one. The greater number of the eggs were much incubated.

"The nest is placed about 5 feet from the ground, invariably supported from below and not hanging as is the case with the nests of other Weaver-birds. It is securely fastened to several stems and leaves of a large species of grass, or to the branches of some strong weed. In the compound of the bungalow at Kyeikpadein I found no fewer than four nests in a patch of weeds near the entrance.

"The nest is cylindrical, about 6 inches high and 4 inches in diameter externally, composed entirely of grasses, woven, on the outside, in a very clumsy manner, the whole exterior presenting a series of loops and sharp angles. The interior is formed of fine grass nicely curved to the shape of the nest and perfectly smooth. The flowering ends of these fine grasses are in some nests brought forward so as to form a ring through which the bird enters the nest. The entrance is at various heights, sometimes in the middle and sometimes quite at the top of the nest. It is about an inch in diameter.

"The colour of the eggs is very variable. The ground of some is white, the whole egg sprinkled with minute dots of pale brown. Of some the ground colour is greenish-white, profusely speckled with greenish-brown, the specks having a tendency to form a ring round the larger end. Others are pale purplish-grey covered with a profusion of darker specks and spots of the same colour spread evenly over the egg and coalescing in places. Others are of a somewhat olivaceous tint, some without a single mark, while others have a few very indistinct lines and clouded spots at the thick end. In fact, from the examination of a large series, it appears that hardly any two eggs are alike. In one nest the two eggs were as different from each other as two eggs could well be, but as a rule the eggs out of the same nest bear a close resemblance to each other.

"This Weaver-bird has hitherto been classed with *baya*, *manyar* and *bengalensis* in the genus *Ploceus*. The very distinct coloration of the male in the breeding season; the fact that the nest is always supported from below and not suspended or even fastened to anything *above* the roof; the abnormal colour of the eggs, which in the other members of the genus (excepting perhaps *philippensis*) are white; the shorter and proportionably stouter bill; suffice, I think, to point out that *hypoxanthus* has little in common with *baya* and its neighbours. For the former, with which *philippensis* will probably range, I propose the genus *Ploceëlla*."

The nests and eggs of which Mr. Oates has sent me a large series are very correctly described by him; certainly the eggs are utterly unlike those of any of our other Indian Weaver-birds or *Munias*, and approximate to those of the House-sparrow. Not only are they not pure plain dead white, but the shells are very smooth and fine and have a decided though not brilliant gloss. The ground colour is white, greenish or grayish white, a delicate Dove gray, or pale purplish-stone colour, and while one or two of the latter colour are quite free from markings, the great majority are some thinly, some thickly, speckled and finely freckled with pale grayish, greenish, or purplish neutral tint.

In shape the eggs appear to be normally somewhat elongated, though very regular ovals, but somewhat broader varieties, slightly pointed or compressed towards one end, occur.

In length the eggs vary from 0·68 to 0·78; and in breadth from 0·52 to 0·58; but the average of twelve eggs measured is 0·73 nearly by 0·54.

697.—*Munia malacca*, *Lin.*

It seems to me very doubtful whether our Black-headed Munia is the bird described under the above name by Linnæus. His name is founded, it is said, on a Bornean species, from which ours is distinct. I have not had time to look the question up, nor do I know whether, if distinct, Latham's name *ferruginea* will apply. I merely call attention to the point. Our Indian bird breeds in many localities in Southern India, but though the eggs have been sent me by many correspondents, only one or two have favoured me with any note on its nidification.

Mr. A. G. R. Theobald writes: "I found the nests near Pothanore in the Coimbatore District during the latter half of October. They were placed amongst reeds growing in a small pond; they were round, with a round hole in one side for an entrance, and were composed of dry reeds and leaves of some flag-leaved grass very like those of the Cholum *(Sorghum vulgare)*. The lining was composed of the hair-like filaments from the Broom-grass of this country. Seven is, I think, the full complement of eggs; I never found more in any one nest."

Dr. Jerdon states that "the nest is usually placed among reeds in tanks or in the beds of rivers; occasionally in long grass in the bunds of paddy-fields. It is a rather large, nearly round or oval, nest, neatly but loosely made of grass, with the hole at one side, this in general being very artfully concealed by the interlacing of the fibres of grass, so that I have been puzzled for a few moments to discover the entrance, and the eggs four to six in number are pure white."

Mr. F. R. Blewitt says: "On the 19th July we were encamped in the open forest country in the immediate neighbourhood of the western side of the hill ranges (branches of the great Vindhyian group) lying in the extreme eastern section of the Bhundara District.

"In a sugar-cane field not far distant from our camp we found five unfinished, and one all but complete, nest, containing a single egg, of the Black-headed Munia. The parent birds were shot while busily engaged in finishing off the entrance of the nest.

"This latter was nearly globular, a mass of coarse grass lined with somewhat finer grass, between 6 and 7 inches in diameter. It was more loosely constructed than those of *Estrelda formosa*, several of which we had found in a similar locality, about a mile distant, two days previously. Both this nest and the other unfinished ones were placed amongst, and attached to, the cane leaves, precisely after the fashion of the Green Amaduvat.

"I may note that again in another similar field, about half a mile distant, we found *Munia atricapilla* busy constructing its nest, two of which were finished, but none of them contained eggs."

The eggs of this species, which I owe to Messrs. Carter, Theobald, and others, are of the usual *Munia* type—dull, pure white, somewhat elongated, oval eggs; there is nothing that I can see to distinguish them from those of *M. punctulata* and *M. malabarica*, except perhaps that elongated varieties are more common amongst them.

In length the eggs vary from 0·6 to 0·72, and in breadth from 0·44 to 0·5; but the average is 0·64 by 0·47.

698.—*Munia atricapilla, Vieill.*

According to Mr. Hodgson the Chestnut-bellied Munia breeds in the lower valleys and cultivated plains of Nepal in open jungle or brushwood, forming a large globular nest in the midst of Bamboos, thick bushes or grass, on or close to the ground, composed of dry grass or straw loosely twisted together, and lined with finer rice straw. It lays from June to August four to six small, oval, pure white eggs.

Dr. Jerdon says: "According to Mr. Frith the nest is ordinarily placed in a Babool tree in Lower Bengal, solitarily, and is composed of a large ball of the tufts of *Saccharum spontaneum*. I have always found its nest fixed to reeds or long grass, and suspect that Mr. Frith must have been mistaken in the identity of the owner of the nest above noticed, the more so because that is exactly the character, both as to materials and site, of the nest of the next species *(punctulata)* noticed."

I have recently had an opportunity of examining a large series of this species, including specimens from various parts of India, Burmah, the Malay Peninsula, Sumatra, Borneo, Celebes, and I must say that I see great difficulty in dividing them as distinct species. They appear to grade wonderfully one into the other, and I should myself be disposed to suppress *sinensis*, Blyth, *bruneiceps*, Walden, &c., and retain all under Vieillot's name.

699.—*Munia punctulata, Lin.*

The Spotted Munia breeds throughout India and Burmah, alike in the plains and in the hills, up to elevations of from 4,000 to 5,000 feet, but as a rule only in well watered and wooded tracts. In the more arid portions of the North-Western Provinces, the Punjab, Rajpootana and Sindh, it is but rarely, and in many localities never, seen.

I have invariably found the nests in July and August, both in the plains and in the Himalayas, but in the Nilghiris the breeding season seems to last in one part or other of these hills from February to September.

The nests are, as a rule, placed at heights of from 5 to 7 feet, and very rarely above 12 feet, from the ground, in thick thorny bushes or trees. In the plains the various species of Acacias, in the hills the Barberries, are much resorted to as nesting sites. Occasionally the nest is placed in very unexpected situations in and about houses, as amongst the creepers trained against the verandah trellis, in a large straw scarecrow placed in a garden close to the house, in an old thatched roof, &c.

The nest is globular, very large indeed for the size of the bird, an oblate spheroid as a rule, from 8 to fully 10 inches in diameter and 6 to 7 inches in height. The nest is usually wedged in between some convenient fork, and not uncommonly rests upon a sort of foundation of the same materials as those of which it is itself composed, *viz.*, rather coarse, often broad bladed grass, used green, rice and barley straw, leaves of Bajera and Jowar, and the like. The entrance is on one side, circular, about 2 inches in diameter, and neatly lined throughout, together with the whole interior of the cavity, which may average 5 inches in diameter, with fine grass stems, the beards of wheat (our Indian bearded-wheat), and barley or rarely fine wire-like roots.

The number of the eggs laid varies much. Seven I consider to be the normal number, but I have found only four hard-set, and some of my correspondents have taken ten eggs in a single nest.

From Hoshungabad Mr. Nunn writes: "Nest and seven eggs secured on 11th August; the former was made on the branches of a low thorn bush, some 6 feet high, well sheltered by the leaves. This low thorn bush was growing with others at the base of a rocky hill far from water.

"The nest was a large loose ball of grass as big as a man's head, with a circular lateral aperture about as big as his mouth. Eggs slightly set."

Mr. F. R. Blewitt thus graphically and accurately describes a very curious nest which he kindly sent me: "A nest of this species, which I obtained in the neighbourhood of Raipoor, was remarkable, as being much more compact and massive than those of this species usually are. It was a very irregularly-shaped nest, something in outline like a gouty foot done up in bandages, the toe pointing downwards, and the aperture where the leg would join on; exteriorly it was composed of coarse broad-leaved grass; interiorly of fine grass and flowering grass stems. The walls were fully an inch thick and very compact. The cavity, measured from the aperture to the bottom, was 6 inches deep, and something less than 3 inches in diameter; exteriorly the nest was some 9 inches measured from heel to toe, and 6 inches from the heel to the mouth of the aperture, and some 4·5 in breadth. The whole exterior portion was composed of green grass, but the fine lining was dry."

Mr. Wait, writing from Conoor, says: "This little bird breeds with us any time between February and September, but the majority lay during April and May. They make a large, oval, globular nest some 9 inches high and 7 or 8 inches in breadth; it is loosely constructed of dry grass, usually the finer sorts, and lined with the same. The entrance, which is on one side, is small. The nests are placed in low trees and shrubs, commonly in such as are well furnished with thorns. They lay from five to eight oval dead-white eggs."

To my friend Miss Margaret Cockburn I am indebted for the following charming account of the nidification of this species :—

"The Spotted Munia is migratory with us, and only appears on the Nilghiris during June and the four following months.

"They return regularly to their old haunts, even to the same bushes in which they built the previous season.

"Several pairs of these birds build in the trellis around our windows, so near the ground that I have often put my finger into the nest and felt the eggs.

"I am perfectly sure that each pair takes possession of the same trellis in which it built in previous years, and that should the old nest remain where they left it they commence another alongside of it: should, however, the old abode be removed, they will build again in the exact site which it occupied.

"The great majority migrate, as already mentioned, to the low country during the cold season, and return when the small grains, millets, and the like, (cultivated so abundantly by the hill tribes) are just beginning to come into ear. I have, however, observed one or two of these birds among flocks of Amaduvats during the month of December.

"I have watched with great interest the punctual return year after year of these pretty friendly little birds, and have very carefully noted their behaviour and habits. In selecting a place to build on they sit on a twig, and raising themselves as high as possible flap their wings over their backs to ascertain that no small branches are likely to obstruct the progress of their building, thus appearing to be fully aware that their nest will occupy a good deal of space. When perfectly satisfied as to the convenience of the spot, the female remains there while the male flies to a short distance, alights on the ground, and breaking off a piece of fine long grass flies back with it to the female, and continues to bring her at least one piece every minute, while she carries on the building process alone.

"They begin early and build for an hour or so, then leave it till evening and work late, keeping up an incessant cry of 'Kitty, Kitty, Kitty.'

"The nest is composed entirely of grass; the entrance is at one side, a small round hole, so small that two fingers can hardly be inserted. They build in July and August, and lay from six to ten white eggs so beautifully translucent that the yolk is clearly seen through the shell. When the young are fully fledged they accompany their parents to the grain-fields, but continue to return to their nests every evening for a long time after they have left them entirely during the day.

"How they all manage to get in is wonderful: the nest appears perfectly full, and they seem to be restless and uncomfortable for some minutes after entering. In the morning they fly out one by one; those that go first wait for the others on some bush close by; when all are out away they fly in a flock, and are not visible near their nest during the rest of the day. At one time I counted no less than fourteen nests of these birds in the trellis of our verandah and windows; besides these there were others in the garden on Orange trees and scarlet Geraniums, which latter here often grow to the height of 6 and 8 feet. Natives frequently go to the nests of these birds during the night, and suddenly shutting up the hole carry of the nest with all its contents, which sometimes amount to twelve birds, parents and young included.

"I have known instances of the House Sparrow taking possession of the Spotted Munias' nests. They wait till the latter have finished building, and then (being much bolder birds) drive the poor Munias away, and adding to the warmth of the nest by a number of feathers appropriate it to their own use. On one occasion a pair of these Munias had taken a fancy to the trellis at my window. When their nest was completed an impertinent Cock-sparrow seemed determined to take possession of it, but I was equally determined he should *not*. After a good deal of trouble the poor owners were again the proprietors of their lawful abode. They appeared to be quite aware that I was taking their part in the arbitration business, and would sit patiently on a Fuschia bush close by till the case was decided; sometimes one of their own species would approach their building, but at these times I considered them quite able to fight their own battles and merely looked on. They required no assistance but would sit close to their nest, cracking their mandibles to show how decidedly displeased they were. This proceeding used often to have the effect of inducing their unwelcome visitor to take his departure; but if he did not think of going soon, they would fly at him and use their bills to such purpose as to make him glad to be off.

"Yet notwithstanding that these little birds are so tenacious of their rights when invaded by one of their own species, they are easily intimidated by any strange and unexpected object. A few articles of furniture being placed under the trellis, which contained several of their nests, so completely frightened the parents away at one time that they left their helpless brood without food, and would not return even when the objects of offence were removed. Of course the young receiving no nourishment all day became fainter and fainter in their cries for food, and at last died."

Writing from Sooramungalum, in Salem, Mr. A. G. R. Theobald remarks: "In this district the breeding season is August. They construct a large round nest (some 25 inches in circumference, with a small circular hole on one side as an entrance) of the broad leaves of Cholum *(H. sorghum)*, rice and barley straw, and in some very thorny bush or tree, commonly selecting the Valum *(Acacia sp.)*. The nest is lined with barley beards. I have always found seven eggs; never more.

"The pair generally lay a thick foundation (as we may well call it) of Cholum leaves between the forks of a convenient branch, and then they commence building the proper nest, which is of an immense size compared to the size of the birds, which are about 5¼ inches long. It takes them some days before the nest is properly completed. The *pair* are always seen to fly out of the nest (during the time of incubation) when disturbed, but I cannot say for a certainty whether they *both* sit on the eggs or not; I think they do, as the number of the eggs is too great for a single bird to cover. I very seldom found a bad egg amongst the ones that contained young ones. I usually found only a single pair building on a tree, but occasionally several build in the same."

Dr. Jerdon remarks that "it builds in thorny bushes, chiefly about fields, and makes a large nest of very fine grass, or not unfrequently of the flowering tufts of some *Saccharum* which I have often seen it conveying to its nest; and I have always found the nest solitary, contrary to Mr. Layard's observations, who states that he has seen thirty or forty nests in one tree, and that in one instance he found one structure containing several nests. The eggs of course are pure fleshy white, usually four to six in number. At Thayetmyo I found it building in a hole in the thatch of my bungalow."

Writing from the plains of Pegu Mr. Eugene Oates says: "This species builds generally in July and August, but a few nests are to be found throughout the year. It is common all along the Irrawaddy Valley, and nests chiefly in thorny bushes, almost always within reach of the hand. The nest is composed entirely of grass (occasionally with a few Bamboo leaves intermingled). The flowering tops of the grasses are generally all brought forward in a bunch through which the bird enters."

Mr. Holdsworth tells us: "I have seen many nests at Orissa and near Colombo, and have often watched the birds biting off the grass stems and taking them to the nest, which has been generally a large structure, sometimes placed near the end of a branch, but more commonly in a thick bush."

The eggs of this species, and I have a vast series from different parts of the country, are typically elongated ovals, more or less pointed towards the small end; and although single eggs might be picked out to correspond, when a large series of the eggs of this bird and *M. malabarica* are compared, the more elongated character of the former is very marked. They are, when fresh, before blowing, a delicate pinky white, the shells, as in the case of so many pure white eggs, being partially translucent; when emptied of their contents the shells are like little balls of snow, pure, dead, spotless and glossless white, occasionally, as is the case always with similar eggs, more or less discoloured if incubation has been at all prolonged.

They vary in length from 0·59 to 0·75, and in width from 0·44 to 0·52; but the average of fifty eggs is 0·65 nearly by 0·46.

700.—*Munia pectoralis, Jerd.*

The above name for the Rufous-bellied Munia can only be maintained if we consider the Australian *Donacola pectoralis* of Gould generically distinct. For my part I should be inclined to lump most of these small Amaduvat-like Finches—*Spermestes, Munia, Donacola, Padda, Lonchura,* &c.—under one genus *(Amadina),* and in that case this bird will require a new name and should stand as *Jerdoni.*

I know nothing of the nidification of this species, but Miss Cockburn says they are summer visitants to the slopes of the Nilghiris about Kotagherry. She adds: "These little birds build in July, and, like all of this species, construct a large nest. Many of them build in the eaves of a coffee store-house which was thatched, attaching their nests to the thatch so far in as almost to be hid. They lay six or eight pure white eggs."

She has sent me a specimen of the bird, so that it is certain that she has not wrongly identified the species.

The eggs that she has kindly sent (which are smaller than those of either of the other species) are regular, moderately broad, ovals, entirely glossless and snow-white, and vary in length from 0·61 to 0·63, and in breadth from 0·42 to 0·46; but they average 0·62 by 0·44.

701.—*Munia striata, Lin.*

The White-backed Munia breeds throughout the Peninsula of India, the eastern portions of the Central Provinces, Orissa, Lower and Eastern Bengal, and Arrakan. Two races of it, scarcely in my opinion specifically separable, are permanent residents, and therefore also breed in the Andamans and Nicobars (*vide* STRAY FEATHERS, Vol. II, p. 257). The breeding season varies apparently very much according to locality. In the Nilghiris they appear to lay in July and August. From Yercand a nest was sent me, taken on the 28th September, containing six eggs. In the Andamans they breed apparently in October. Near Raipoor nests were taken in January, and in Manbhoom in April.

I have never taken the nest myself, and, though several have been sent me, they are not structures that as a rule bear carriage well.

A nest secured by Mr. F. R. Blewitt in the neighbourhood of Raipoor on the 2nd January was a very large, loose, partially domed, oval-shaped structure, composed interiorly of very fine grass stems, exteriorly of coarser grass largely intermingled with dry Bamboo leaves. Exteriorly the nest was about 8 inches in height and 5 inches in diameter. The cavity, the aperture of which was a little on one side and nearly at the top, was nearly 5 inches deep and about 3 inches in diameter. The nest was very loosely and coarsely put together. It was placed on a branch of a Karounda *(Carrissa carounda)* bush, about 5 feet high, growing on the bank of a nullah.

Mr. E. Aitken writes: "I once found a nest of this Munia in Bombay, about 12 feet from the ground, I think, in a small tree. I took no note of it at the time, but I recollect that they had two young ones flying about with them soon after. Perhaps, however, some particulars of a pair that bred in a cage may be useful. The nest was a darkened compartment, which they filled with fine grass which I gave them. I could not watch their operations too closely for fear of frightening them, but I took some notes. First, they laid an egg with a soft shell and broke it, so I supplied them with chalk or old egg shells and they began again. This time I thought the female laid three eggs, but only two young were forthcoming, and if she had another egg, they must have disposed of it themselves. I supplied them with bread and yoke of egg, with which the male assiduously fed the female all the time of incubation and for ten days after the young were hatched. During these ten days I only saw the female twice. After that they shared the duty of feeding their offspring between them. The eggs were undistinguishable from those of *M. malabarica*."

Miss M. B. Cockburn tells us that "the White-backed Munia is not a resident on the Nilghiris, but accompanies the Amaduvads and Spotted Munias in their migrations, and is generally met with in their society, except in the breeding season, when they are seen alone and in pairs. They are not numerous and are very shy, never approaching any house. In this respect they are quite unlike the Spotted Munia, whose unceremoniousness endears him to us.

"The White-backed Munia's nest resembles that of the Spotted Munia, being a large accumulation of grass with a small opening at one side. Nothing warm is used as a lining. The nests are found in July, and contain six or eight pure white eggs."

Of the Andaman race Mr. Davison says: "They must breed very early, or rather perhaps I should say late, for when I arrived at the Andamans in December the young had left the nests. Several old nests that I found were large globular structures made of grass, with the entrance placed at one side and drawn out into a short neck; in fact, very similar to those of *E. amandava*."

The late Captain Beavan stated that at Manbhoom "a nest of this species (like that of *M. malacca*, and as described by Dr. Jerdon), containing only three eggs, was brought to me on the 3rd April."

Dr. Jerdon himself tells us: "In Malabar it is a familiar bird, being constantly seen on the road side, about houses, and in stable yards, and it builds in gardens and orchards, solitarily, making a large loosely constructed nest of grass, and laying four or five white eggs during the rains."

The eggs which I have from Yercand in Southern India, Raipoor, and other places, are precisely similar in appearance to many eggs of *Munia punctulata, malabarica*, &c. They are regular, somewhat elongated, little ovals, very pure white and perfectly devoid of gloss.

They vary in length from 0·55 to 0·65, and in breadth from 0·42 to 0·47; but the average of ten eggs is 0·61 by 0·44.

702.—*Munia acuticauda, Hodgs.*

This species, which we may term Hodgson's Munia, the trivial name applied to it by Dr. Jerdon—the Himalayan Munia—being singularly inappropriate, breeds within our limits, throughout the Himalayas east of the Ganges, at all elevations up to 5,000 feet, throughout Assam, Cachar, Tipperah, Eastern Burmah, and Tenasserim, in all well wooded, undulating, or hilly localities. Eastwards it extends to Canton, Amoy, Shanghai, Formosa, &c., and probably will be found in Siam and Cambodia.

Speaking of these species, *atricapilla* and *punctulata*, Mr. Hodgson remarks that "these species are solitary in regard to nidification, but after the breeding season they are all gregarious in a greater or less degree. They are exclusively graminivorous, feeding on hard grass seeds or cerealia, according as one or the other are procurable, and they fix their large globular nests either among the spiny leaves of the Palm trees, or the thick interlaced branches of the lesser Bamboos; but there is no weaving or sewing employed in the structure of the nest: it is merely a large ball laid against or upon naturally blended branches of stiff leaves, and having a small round entrance either on the side or at top. The eggs are many, and in *M. rubroniger, atricapilla*, are of a bluish-white colour. These birds are easily tamed and caged, but they have no song.

"The whole species are migratory, appearing in June and departing in November. Many of them breed in my grounds, and are solitary so far as I have observed. The nest is composed of grass, fibres, or leaves of *Pinus longifolia*, and is usually constructed in the midst of clumps of small Bamboo or of the Dog-rose. The male and female labour at the work with equal assiduity, and share equally the task of rearing the young."

Writing from Sikhim Mr. Gammie says: "A nest taken out of a small tree some 10 feet from the ground in the valley of the Ryang, about 2,500 feet above the level of the sea on the 20th June, contained six hard-set eggs. For so diminutive a bird the nest is enormous; externally it is fully 5 inches in diameter and 7 inches in height, and even the egg cavity was nearly 6 inches deep and more than 2 inches in diameter inside, but the actual entrance was, of course, much smaller. It is entirely composed of grass, the basal portion and the exterior at the back where it was wedged against the stem of the tree of very coarse and rough grass, much of it broad-bladed, the upper portion and the whole of the interior of very fine grass."

Later he remarked: "This Munia lays between the middle of June and the middle of August, at elevations from 2,000 to 4,000 feet. It builds, from

6 to 20 feet from ground, in open country, in shrubs and small trees. The nest is globular; entirely made of the grass panicles from which the seeds have dropped, intermixed with a few Bamboo leaves, and measures externally about 6 inches in height by the same in width, while the cavity is about 3 inches in diameter by the same in depth from lower edge of entrance. The entrance is in the side, close to the top, with a quantity of the grass (of which the nest is made) projecting over it. The eggs are white and five or six in number.

"This bird is much disliked by the natives on account of the large quantities of rice it consumes. I have seen a flock of twenty or thirty clinging to a single head of flowering grass, when they appear, from a little distance, more like a swarm of bees than a flock of birds."

Dr. Jerdon says: "Its nest is of the usual structure, large, and loosely made of fine grass, and there are generally five or six white eggs. I found it far from rare on the Khasia Hills."

Mr. Irwin, who took a nest of this species in the Tipperah Hills in June, described it as composed of fine grass stems placed in a half open hole in a low bank. It contained five eggs nearly hatched.

The only eggs that I possess of this species were procured in Tipperah by Mr. Irwin, and near Darjeeling by Mr. Gammie and others. They are slightly elongated ovals, pure white and glossless, undistinguishable from those of other nearly allied species.

They vary in length from 0·54 to 0·65, and from 0·4 to 0·44; but the average of seventeen eggs is somewhat less than 0·6 by 0·42 barely, and therefore, looking to the size of the bird, these must, I think, be below the *general* average.

703.—*Munia malabarica, Lin.*

The Pintail Munia, like the Spotted one, breeds pretty well all over India, but the present species affects the more arid tracts, the latter the well wooded and watered ones. I know of no month in which in one place or another its eggs may not be found. I have taken them myself in January, February, March, and April, and again in July, August, and September. Mr. Theobald obtained them also in May, October, and December: Mr. R. M. Adam in November. They have certainly two broods, probably more: the great majority of nests will everywhere, I think, be found from January to March and from July to September.

Normally, in fact nine times out of ten, they place their nests in low, thick, thorny bushes, at heights of from one foot to 5 feet from the ground; but I have found them in the most out-of-the-way situations: once in a hole in a wall: once in an old thatch: several times in a haycock in my own ground, and once in amongst some dry bushes stuck up as supports for, and almost covered with, sweet peas.

Typically the nest is large and globular, loosely put together of fine and coarse grass, the latter predominating on the out, the former on the in, side, and with more or less of fine vegetable down as a lining. But they are sometimes only partially covered over, sometimes quite open above, and all kinds of odds and ends are not unfrequently pressed into the service. I quote a few old notes of nests made on the spot at the time of finding them:—

"Took a nest near Etawah on the 22nd January 1867. It was composed entirely of the flower stems of the *Chireyan-ki-Chunne (Agrostis sp.)*, mixed here and there with a few tiny pieces of cotton, a small flock or two of wool, one little piece of red cloth, and a few very small pieces of coarse cotton fabric. It was placed in a small bush of the Jherberi *(Zizyphus nummularia)* about 6 inches from the ground. It was open, broadly saucer-like, some few of the elastic grass stems of the sides overhanging the cavity of the nest. It contained four pure white eggs."

"A nest containing eight eggs, taken on the 26th January 1867, was a complete sphere of soft grass with only a hole in the side. It was pretty thickly lined with cotton wool, and contained one or two small coloured rags. It was in a Heens bush (*Capparis aphylla*) with other nests about 6 feet from the ground."

"*January* 28*th.*—In a Bêr tree, about 10 feet from the ground, the nest loosely made of the flowering stalks of delicate grasses, with a good deal of cotton and one greenish rag incorporated; only one egg."

I have never taken more than eight eggs in any nest, and I have never myself had any reason to believe that more than one pair were concerned in the construction or equipment of any nest I ever met with; but it will be seen that two pairs do sometimes combine to build and fill a single nest.

Mr. W. Theobald makes the following note of this bird's breeding in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lay in the months of May, August, September, October, and December. Eggs twelve and thirteen (=twenty-five) in number, ovato pyriform, measuring from 0·59 to 0·64 in length and from 0·44 to 0·50 in breadth; colour, pure white. Two pairs of birds frequently, if not usually, are employed in the construction of one nest in which the two hens consecutively lay, so the same nest has sometimes twenty-five eggs in it in different stages of incubation. Nest often clumsy and hastily made, but usually a neat-domed structure of fine grass with one opening; sometimes prolonged into a short deflected neck partially closed by the elasticity of the long spikes of grass forming it; sometimes the nest is a simple platform of grass, open at each end, but the grass ends curved over to meet at the top, usually placed in thorny bushes, often very conspicuously and close to roads. It is much to be doubted if the eggs found occasionally in October and December are hatched."

Mr. Brooks tells me he has often taken eggs at Mirzapoor in December, and I have found young birds often in the commencement of January, so that I see no reason to doubt the hatching of the December eggs.

Sometimes they will even share a nest with another species. Captain G. F. L. Marshall remarks of the Pintail Munia: "I have taken eggs hard-set in the first week in February in the Allahabad District. I have found them breeding in the eaves of a verandah, the nest being formed of the usual materials—fine grass stems in seed, but used only to line the hole in the roof. Out of one nest similarly situated, but made of grass and feathers mixed, I took seven eggs of this bird and four of *Passer indicus*, the nest in this case was probably built by the Sparrow."

Mr. R. M. Adam, under date November 15th, 1867, writes from Baraich: "On the 25th October I found a half-built nest of *Munia malabarica*; two days after on visiting it again I found it finished. November 3rd I found three eggs; on the 9th one bird was hatched and four eggs in the nest; one was hard-set which I left; the other three I took and cleaned, and found in them just the germs of life. On the 10th the egg I left was hatched. On the 12th I found the birds had deserted the nest. It was built in a Saro tree *(Cupressus sempervirens)* in the public gardens, about 5 feet from the ground, and was composed of several kinds of green and dry grasses, some of the heads of which were downy, and these with some soft feathers formed the lining of the nest. The grasses were matted without much skill into a shape like a Florence flask, without neck, and supported by the branches and twigs of the tree. There was only one opening, which measured 2 inches in diameter. In length the nest measured 6 inches, in width 5½ inches and in circumference, round thickest portion, 14 inches."

As for the size of the nests this varies very greatly. I have seen some fully 2 feet in circumference.

Colonel Sykes tells us that "these birds live in small families. I have frequently found them in possession of the deserted nests of the Common Weaver-bird; but their own nest is a hollow ball, made of a delicate Agrostis, with a lateral hole for the entrance of the birds. I took a nest in the fork of a branch of the *Mimosa arabica;* it contained ten oblong minute white eggs. The cry of the bird is 'cheet, cheet, cheet' uttered simultaneously by flocks in flight."

Long ago, after a shooting excursion we had made together, Mr. F. R. Blewitt wrote me the following account of a nest of this species that he found in the Dehli District:—

"You may remember the first morning we went out together, just after you had shot the Buzzard, having a large nest on a "Reunj" tree searched; it was then empty, but the other day happening to pass that way I found three eggs of the "eternal" *A. fulvescens* in it. As my man ascended the tree to fetch the eggs, I saw a pair of the small *Munia malabarica* hopping about from branch to branch, *near* to the nest, in great anxiety, chirping loudly all the while. Taking the binoculars to watch the birds and their, as it appeared to me, strange movements more closely, I saw one of them suddenly enter and disappear in a small hole in the *under* part of the large nest: the other immediately followed the first, then both came forth and commenced hovering about the man, who had by this time reached the nest. Not knowing what the hole could be there for, I directed the man to inspect it, when to my astonishment it turned out to be a nest *in* a nest. The Munias evidently had selected that of the Eagle to make their own in to secure warmth from their mighty companion. From the position of the under nest, the Munias at any time when in it could not have been more than 2 inches separated from the sitting Eagle."

Years later he favoured me with the following general account of the nidification of this species founded on his experience in the Dehli, Jhansi, and Saugor Divisions:—

"Breeds in August and September. The nest is a large loosely-constructed fabric of fine grass, at least on the outside. The lining is of soft flowering grass, and very neatly laid on in the interior of the nest. The nests are almost always found supported in the branches of low jungle bushes, sometimes about the middle of the bush, at others near the top. The nest is of various shapes, and its *intended* form appeared to me to be previously regulated according to situation. When it could be done with convenience as well as safety, the nest assumed an almost globular shape, with an entrance hole at one side; at other times it was open at the top, with the sides, or rather the grass of the sides, curving over. Again, some of the nests were of the shape of an hemisphere, with a hollow for the eggs, but of whatever shape the material of each nest was precisely the same—fine grass outside, and the lining of the flowers of grass.

"It is very difficult to state the regular number of eggs of a pair. I have had as far as fifteen in one nest, and every one of them quite fresh; at least on blowing them they appeared to be so. No doubt the eggs were of some two or three pairs. But I believe six is about the regular number of one pair. In the assistant's bungalow at Bubeena, a Weaver-bird's nest was hung up at one end of the verandah. Some short time after a pair of Munias took possession of it, and, though the people were constantly passing within a foot or two under it, the female laid six eggs. Unfortunately one night the peon on watch with his *lathi* accidentally struck the nest and capsized it, eggs and all."

From Poona, Mr. E. Aitken writes: "I have seen countless nests of this bird, but it is difficult to give any accurate account of its nidification, owing to the confused way in which it manages its domestic affairs. Sometimes two pairs seem to unite in partnership, or again solitary females will go on laying any number of barren eggs, as fast as the lizards can eat them up! So my information must be a little vague.

"In Poona they breed in the cold season; they commonly build all over the rocky plains, but many also in gardens in the cantonment. The nest is usually about 6 feet from the ground, and varies from a large hollow ball of fine grass, with a hole at one side, to a flat nest with some of the grass bent over in an arch. The material is almost always plain grass, and there is no lining. In one case, which I took to be a real *boná-fide* attempt to bring up a single family, I counted with my finger six eggs, but I cannot remember any other trustworthy case in which there were so many eggs belonging to one pair.

"I believe they frequently use their own and each others' old nests. Jerdon does not mention that they employ their old nests to sleep in. I have driven a whole flock out of one after dusk."

The eggs are pure white, spotless, and devoid of gloss; typically rather broad and perfect ovals, not unfrequently more or less pointed towards the small end. Compared with those of *malacca, punctulata, pectoralis,* and *striata,* the eggs of the present species are slightly smaller and decidedly rounder.

In length they vary from 0·55 to 0·68, and in breadth from 0·45 to 0·5; but the average of fifty eggs is 0·6 by 0·47.

703 *bis.—Padda oryzivora, Lin.*

This species, the well-known Java Sparrow, a native of that island but now naturalized in Mauritius, Ceylon and other places, has naturalized itself also in the neighbourhood of Madras, whence I have had many specimens, killed wild, as well as the eggs sent me by my friend the late Captain Mitchell. He "found a nest near Madras in August containing five eggs. It was placed like a *Munia's* in a thorny bush 7 or 8 feet from the ground. The nest was globular and very large, chiefly composed of fine grass but with a few broad-bladed leaves of millet intertwined. The entrance small, circular, and lateral."

The eggs were very regular ovals, pure, glossless white, and varied from 0·7 to 0·75 in length, and were (all the three he sent me) 0·55 in breadth.

704.—*Estrilda amandava, Lin.*

The *Indian* Amaduvat (there are two, if not three, very closely allied species) breeds pretty well all over the Indian Empire (except in the Punjab), in suitable localities. In the bare portions of the North-West Provinces and Rajpootana, I have never known it as more than a passing visitor, but wherever the country is well watered, and either well-wooded or abounding in high grass—in Meerut and the districts of the Doab northwards, in many places in Oudh and Rohilkund, Saugor, Chanda, Raipoor in the Central Provinces, in the more fertile portion of Sindh, in all our Dhoons and Terais—I know of its nesting.

In all these localities it breeds, I believe, twice a year—once from November to February, and the second time from June to August—but in the Nilghiris, which it ascends to an elevation of 6,000 feet, the breeding season seems to last from May to December. In the Himalayas I have never heard of its breeding at elevations exceeding 2,000 to 3,000 feet.

All the nests that I have myself found were oblate spheroids, loosely but not untidily built with fine grass, and lined with fine seed down, the entrance circular and at one side, perhaps 1½ inch in diameter. Externally the nests vary in diameter from 5 to 7 inches, and in height from 4 to 7 inches.

One nest of this species sent me from the neighbourhood of Saugor was of a deep, clumsy, purse-shape, almost egg-shaped; it had been laid in a fork of a bush sideways, the aperture being at one end; it was very loosely and raggedly put together with fine stems of grass, and thickly and warmly lined with grass seed down. The cavity was about 4 inches deep and about 2 inches in diameter, and narrow at the mouth. Externally the nest was 5·5 and 4·75 in diameter and 6 inches in length.

I have invariably found the nest in thick dwarf bushes very close to the ground, at most at a height of 3 feet.

Six is, I believe, the full complement of eggs, but seven and even eight may occasionally be found.

Mr. F. R. Blewitt says: "The Indian Amaduvat breeds freely in the Raipoor and Sumbulpoor Districts. The 8th December is the earliest, and the 25th February the latest, date on which we have there taken the eggs. Wild-plum (*Z. nummularia*) bushes growing promiscuously in the grass jungles near to, or on the borders of, the banks of the many large and small streams intersecting the open forest country are preferentially selected for nesting. Occasionally an odd nest, well concealed in the interior of the bush, has been discovered on a plain distant from water.

"The nest, for better concealment and protection, is generally constructed about the centre of the bush from a foot to 3 feet from the ground. Only on one occasion, when stalking Cheetul on the bank of a stream, did I find a nest at the base of a small Plum bush with the under portions resting on the ground. So well concealed was it that, but for the sudden flight of the female on my near approach, I should never have detected it. The nest contained six tiny creatures a day or two old.

"The nest in dimensions and shape much resembles that of *M. malabarica*, though more neatly and compactly made; the opening is invariably at the sides. Coarse and fine grass constitutes the material of the fabric. On some nests I have found spider's web in places firmly attached to the exterior. And here I may note a curious fact. The male bird often persistently continues to bring and add materials to the nest during the process of incubation. The return of the bird with grass in his beak has many a time betrayed the situation of a nest, with the female and full complement of eggs more or less incubated, which but for this singular habit would never have been discovered. The largest number of eggs taken in one nest was eight, but six would appear to be the normal number. The Red Wax-bill, according to my experience, breeds but once a year, building a fresh nest each time. The eggs are laid daily, but the full period of incubation I have not ascertained. Both parents share in the building of the nest, as well as in hatching and feeding of the young."

Writing from Kotagherry, Miss Cockburn says: "These birds build *large* round nests, consisting entirely of fine long grass and lined with a few feathers; the entrance is at one side. They appear fond of placing their nests at the roots of small bushes, and sometimes among the branches, but *very* low down. They lay six *very* small white eggs, which without exception are the most diminutive I have ever found in any bird's nest here. They build their nest in November and December."

I never happened to find feathers in any nest, and Mr. Davison too says: "The Amaduvat breeds with us on the Nilghiris from August to November. The nest is a large globular structure of grass, with the entrance to one side and near the top. For the size of the bird this nest is exceedingly large, being quite as large as a man's head. It is composed of fine grass and of nothing else, never being lined with feathers as that of *Munia punctulata* very often is. The eggs, five in number, are pure white."

From Conoor Mr. Wait remarks that "here they breed from May to September. The nest carefully domed, just like that of *punctulata* but smaller. It is composed of fine grass and lined with the same. The eggs usually about five in number."

Dr. Jerdon states that "the nest is large, made of grass, and placed in a thick bush, or occasionally in long grass or reeds, and the eggs, six to eight in number, are very small, round, and white."

The eggs of this species are, like those of the whole family, pure white and glossless when blown, more or less pinky white when first found owing to the partial translucency of the shell. In shape they are oval, and though very broad often a good deal pointed towards one end, and sometimes towards both. In size they are considerably smaller than those of any of the *Munias* but *acuticauda*, and they are shorter than these even.

In length they vary from 0·52 to 0·62, and in breadth from 0·4 to 0·46; but the average of fifty-six eggs is 0·55 by 0·43.

705—*Estrilda formosa, Lath.*

The Green Amaduvat is common enough in many parts of the Central Provinces, but I only know of its nesting in the wilder eastern districts of these.

In the Raipoor District it breeds, I believe, from October to the middle of January, and probably again in the early part of the rains in sugar-cane fields, or perhaps amongst the dense jungle grass that fringes in most localities the banks of streams and rivers.

Mr. F. R. Blewitt writes: "For years have I tried to secure the eggs of *E. formosa*, but without success. When at Saugor in the month of May, in a sugar-cane field, a favorite resort of this Wax-bill, my men discovered two nests—one complete and the other all but finished—built on, and firmly attached to, the stalk ends of two or three of the upper leaves. They were somewhat oblong in shape, and very neatly and compactly made. The interior lining was fine grass, the exterior of coarse grass and long strips of only sugar-cane leaves, well interwoven with the coarse grass. The men told me that the birds had deserted the nests, but on inspection I had reason to discredit their statement.

"Two years ago, in January, my men shot on the banks of a stream here in high grass a young bird that had but just left the nest. Every search was made all along the bank of the nuddee for nests, but unsuccessfully. It would thus appear that *E. formosa* breeds twice a year."

Later, however, Mr. Blewitt did succeed in getting the eggs. He says: "On the 17th July we were encamped in the open forest country in the immediate vicinity of the western flanks of the hill ranges of the extreme eastern section of the Bhundara District.

"In a sugar-cane field of about 2 acres in extent, on the bank of a broad hill torrent, I found four unfinished, and three complete, nests, each containing five eggs, of *Estrilda formosa.*

"The nests, one and all, were some 5 feet from the ground in the upper portion of the sugar-cane, the stalk forming a side support opposite the entrance. The frame-work of the nest is first strongly and neatly secured by lacings of coarse grass between two of the cane leaves, one above and the other below; but as the building proceeds three if not four additional leaves are caught on to the sides of the nests and firmly interlaced in the exterior material. The inner portion or lining is completed last. When finished the nests are large, globular structures, made exteriorly of coarse grass and strips of the cane leaf itself, the inner cavity being thickly lined with very fine grass, all somewhat compactly put together.

"The entrance hole, which is prolonged into a short neck, is invariably in the centre, opposite the sides supported by the cane stalk, and is well concealed by projecting grass fibres.

"Five is apparently the normal number of the eggs, and both sexes are equally employed in building the nest and incubating the eggs. One male was shot busily at work at the short neck of the nest, the female the while sitting on the eggs. Evidently a new nest is prepared each successive season, and I think they always breed in society, several nests being found in close proximity."

The eggs, as might be expected, are snow-white and entirely devoid of gloss. In shape they are somewhat elongated ovals, some few of them slightly compressed towards one end.

In length they vary from 0·61 to 0·7, and in width from 0·45 to 0·48; but the average of fourteen is a little more than 0·66 by nearly 0·47.

706.—*Passer indicus.*

It is with extreme hesitation that I follow "my betters" in assigning a distinct specific title to our Indian House-sparrow. Between ourselves I don't much believe in its distinctness. I have some "truly rural" French and English Sparrows—none of your London or Newcastle, black country or manufacturing districts, street Arabs, but real, unsophisticated, rosy peasants that match some of our Indian birds fairly.

But what is in a name ? Call him *domesticus* or *indicus*, it doesn't alter his depraved nature, does not make him one whit less detestable—only there is a certain *lucus a non lucendo* sarcasm involved in the Linnæan name that aggravates.

If domesticity consists in sitting upon the punkah ropes all day, chit, chit, chit, chittering ceaselessly when a fellow wants to work, banging down in angry conflict with another wretch on to the table, upseting the ink, and playing old Harry with everything, strewing one's drawing-room daily with straw, feathers, rags, and every conceivable kind of rubbish in insane attempts to build a nest where no nest can be—if I say these and fifty similar atrocities constitute domesticity, heaven defend us from this greatly lauded virtue, and let us cease to preach to our sons the merits of *domestic* wives ! Conceive a wife evincing similar tendencies ? Why, there isn't a jury in the country who would not return a verdict of "sarve her right," even if the unhappy husband should have wrung her neck before the golden honeymoon had run out.

Now, everybody does or ought to know all about the nidification of Sparrows (they are, I may remark *en passant*, greatly wanting in delicacy in their domestic arrangements), and all I mean to say is that their nests are shapeless bundles of straw, grass, rags, wool, or anything else they can lay their bills or feet on, thickly lined with feathers, stuffed into any holes or crevices about huts, houses, walls, old wells, &c., that they can find, and even, though rarely, into the centre of some thick bush. They lay five or six eggs, sometimes even more, and have two or more broods during the year.

As to season this varies somewhat, but from February to May are mostly the months "when sparrows build." If you require further particulars, "circumspice !" My one regret has ever been that the whole race had not before my time met, under Providence, that appropriate doom so graphically depicted in Mr. Yarrell's charming wood-cut.

The eggs exactly resemble those of our English House-sparrow, but possibly average smaller. They are typically somewhat elongated ovals and but little pointed, but, as in all other species, varieties occur, and broad oval eggs, pointed and pyriform ones, are seen. The ground colour is either greenish-, greyish-, or yellowish-, white, or sometimes a pale stone colour. The markings are most commonly close frecklings, fine *striæ*, or smudgy streaks ; but in a certain number of eggs the markings are spots, specks, and blotches pretty sharply defined. The colour of the markings vary—sometimes sepia-, sometimes olive-, sometimes yellowish-, and sometimes purplish-, brown : whichever shade it be, it is generally dull and dingy ; and besides these primary markings many eggs exhibit pale inky purple clouds and spots, which seem to underlie the brown markings. I have one egg which I took near Jodhpoor—a uniform pale fawn or stone colour, with, for its only markings, a long, fine, intricately jagged black line near the big end, such as one often sees on the eggs of the Yellow-ammer. As a rule the eggs have very little gloss, but here and there one somewhat more glossy may be met with. In, I think, about half the eggs there is a more or less marked tendency to form a blotchy, mottled, ill-defined cap at the large end, and in some this is very conspicuous.

In some birds, whose eggs as a body vary excessively, you at any rate find all the eggs of each clutch of the same type. This however is not at all the case with Sparrows ; on the contrary almost every clutch contains at least two types—a very light and a very dark one.

The eggs vary very much in size, in length from 0·6 to 0·88, and in breadth from 0·58 to 0·65 ; the average, however, of fifty-seven eggs is 0·81 by 0·6.

708.—*Passer cinnamomeus, Gould.*

The Cinnamon Tree-sparrow breeds throughout the Himalayas from Murree to Nepal, at elevations of from 4,000 to 6,000 or even 7,000 feet. Further east it occurs, though as a straggler, but I have no record of its breeding there.

It lays in May or June, making typically a large loose nest, composed of dry grass and plentifully lined with feathers, in some convenient hole in a decaying tree or branch at no great elevation from the ground. Occasionally it builds under the eaves of houses, in the walls of sheds, and, as Captain Marshall tells us (I have never myself seen this), in deserted Swallows' nests. In the same way the Common Tree-sparrow, normally, I should suppose, a tree nester, has in parts of Europe as well as in the Eastern Himalayas and Burmah become more or less of a House-sparrow in its nidification.

As a rule the nests are ragged and shapeless externally (more or less filling up the entire hole in which they are placed), with a rather deep, central, circular cavity.

Four is the usual number of eggs, but I have often found five, and once as many as six. This bird breeds in great numbers about Kotegurh, but rarely more than one pair is found in the same tree or about the same house. An hundred nests may be found within a radius of a quarter of a mile, but they do not cluster together into Sparrow-towns as the Willow-sparrows do.

Mr. E. C. Buck, C. S., writes: "On the 15th June at Shah, between Saraon and Goura, I found a nest of the Cinnamon Tree-sparrow containing four fresh eggs. The nest was a broad loose cup of dry grass, lined with feathers, some 6 inches in diameter externally. It was placed in a hole in a thick branch about 12 feet from the ground."

From Dhurmsala Captain Cock remarks: "This is a common bird here; usually breeds at an elevation of from 4,000 to 5,000 feet. It always breeds in hollow trees, especially in the Rhododendron, and makes a large nest of grass lined with feathers after the usual Sparrow fashion. It lays four eggs, smaller than those of *Passer indicus*. It breeds in May and June. The nest is usually at a low elevation from the ground, say between 4 and 10 feet."

From Murree we hear from Captain C. H. T. Marshall that the Cinnamon Tree-sparrow "lays in deserted Swallows' nests and about houses. At Dhurmsala this Sparrow always builds in trees out in the forests."

In shape the eggs are typically very perfect, moderately elongated, ovals, scarcely compressed or pointed at either end. They vary a good deal in appearance; many closely resemble common varieties of those of the House-sparrow, having the ground colour white, greyish-,or greenish-,white, more or less thickly speckled, spotted, streaked, or blotched with various shades of brown, chiefly sepia brown. In this type of egg the markings are generally densest at the large end, where they are often more or less confluent, and even form a broad, irregular, mottled cap. Others again closely resemble the eggs of *P. flavicollis*, and are so densely streaked and smeared all over with sepia brown as to leave little of the ground colour visible. A third type has the ground colour a faintly brownish-grey, and exhibits a well-marked zone of dark sepia brown about the large end, and only a few specks, spots, and streaks of the same colour scattered over the rest of the surface of the egg. In size they do not vary much, *viz.*, only from 0·72 to 0·8 in length, and from 0·55 to 0·65 in breadth; but the average of twenty-eight eggs is 0·76 by 0·57.

It will be seen, therefore, that, as Captain Cock remarks, they *average* considerably smaller than those of the House-sparrow.

708 *bis.—Passer flaveolus, Blyth.*

Writing from Thayetmyo Mr. Oates remarks: "Blyth's Tree-sparrow is nearly as common as *P. indicus.* It is, however, more of a Bush-sparrow, generally building its nest in trees; one pair indeed built a nest in my house, but as soon as it was finished the birds left the place."

710.—*Passer montanus, Lin.*

I know little of the nidification of this, the Common Tree-sparrow of European writers, except in British Sikhim, where it appears, at elevations of from 3,000 to 7,000 feet, during the summer, and where it breeds about all human habitations during the spring and summer, making a nest precisely similar to that of the Cinnamon Tree-sparrow, and laying from four to six eggs. I have ascertained that these Sparrows rear at least two broods during the summer. In Burmah the bird breeds we know, and throughout the Himalayas east of Nepal; but though it *occurs* as far west as Chini in the Sutlej Valley, I have not heard of its breeding west of Nepal.

Mr. Gammie says: "This species breeds freely about our houses in Sikhim. There are always nests about the eaves of the houses. The nest I send you was taken on the 18th May in my house at Mongphoo: elevation 3,500 feet. It contained five partially incubated eggs, four of which I send."

Again writing on the 24th July he remarks: "I see *Passer montanus* now building for, at least, their second brood. For the first brood they began early in March. The old ones are still feeding their young, which are flying about quite as well as their parents."

The nest is a huge warm cup, at least huge for the size of the eggs, exteriorly 6 inches by 4·5, and nearly 2 inches in height, with a cavity 3 inches by 3·5 and 1·5 deep. Interiorly it is very closely, and smoothly, and softly lined with feathers. Round this is a quantity of tow or similar soft vegetable fibre, while exteriorly the nest is composed of more or less coarse grass blades and stems.

Writing of this species from Pegu, Mr. E. Oates remarks: "This bird is commoner than *indicus* in the valley of the Sittang River. In Rangoon it appears to be the only House-sparrow. Its nest and eggs are not distinguishable from those of *indicus,* and it breeds in the same sites."

I cannot quite agree with this. The eggs vary as all Sparrows' eggs do, but as a body they more nearly resemble those of "*flavicollis*" than of "*indicus.*" The ground colour is white, greyish-,or brownish-,white. Some are speckled and spotted, some blotched, smeared, and streaked, some sparingly, but the majority densely, with varying shades of brown and greyish-lilac, the markings being generally densest and darkest in a zone or cap towards the large end. Typically the markings are, I think, blurred, smeared, and indistinct, leaving little of the ground colour visible, but occasionally the spots are brighter coloured, sharply defined, and comparatively few in number. Nine eggs before me vary from 0·67 to 0·82 in length, and from 0·48 to 0·58 in breadth, but their average is 0·73 by 0·54.

711.—*Gymnoris flavicollis, Frankl.*

The Yellow-throat Sparrow breeds pretty well throughout India, except in the extreme south, and again in Orissa and Bengal Proper. From Behar to Sindh, and from Dehra Dhoon at any rate to Bangalore, it may be found nesting I believe, but the bird is unfortunately so common that few of my correspondents have thought it worth while mentioning it. In the Himalayas west of the Beas it occurs up to elevations of 4,000 or 5,000 feet.

In the plains it breeds in April and May; in the hills about Murree, according to Captain C. H. T. Marshall, in July.

I have taken scores of nests of this species; all were without exception placed in holes in trees. Generally the bird selected good sized trees. Old Mango trees, for instance, are very often chosen, and in these the nests may be found at 30 feet from the ground, though usually they are at heights of from 12 to 20 feet; sometimes some old stub is patronized, and then the nest may not be a couple of feet from the ground. On one occasion I found a nest in a hole in a stem of an old Heens bush (*Capparis aphylla*), which stem was barely 5 inches in diameter.

The nest is generally only a little bundle of dry grass, thickly lined with feathers. If in a Mango grove much frequented by the Common Green Paroquets, the feathers of these latter are sure to be those chiefly used. Sometimes, however, a more or less cup-shaped nest is formed, fine strips of bark and tow being added to the grass; and again at times it is a regular pad of hair, tow, and wool, with a few feathers, all closely interwoven, and with only a little central hollow.

I never found more than four eggs, often only three fully incubated ones, but more may occur.

Mr. R. M. Adam writes to me that he "found a nest of this bird in a Mango tree in Oudh on the 4th May: it contained only one fresh egg."

Dr. Jerdon says: "It breeds in holes in trees, and in some parts of the country in the roofs of houses, in the hollow bamboos of the roof, and occasionally in pots hung out for the purpose. The eggs are three or four, greenish-white, much streaked and blotched with purplish-brown."

The eggs are dull and glossless, moderately elongated ovals, sometimes pointed towards the little end, sometimes blunt and pyriform. Considering how nearly equal in size the two birds are, it is surprising to find that the eggs of this species average in weight little more than half those of *P. indicus*. The ground colour, where any of it is visible, is greenish-white. The eggs are very thickly streaked, smudged, and blotched all over with dingy brown, usually more nearly a mixture of sepia and chocolate brown than any other shade I can think of. In some eggs the markings are entirely confluent all over, so as to leave no particle of the ground colour visible, and in all the eggs I have seen they were so thick as to leave but little of this visible. The very dark dingy appearance of these eggs is their chief characteristic.

The eggs vary less in size than those of the House and Cinnamon Tree-sparrows, and are considerably smaller than either. In length they vary from 0·66 to 0·78, and in breadth from 0·52 to 0·56; but the average of thirty-four eggs is 0·74 by 0·55 nearly.

813.—*Citrinella cia, Lin.*

The Meadow Bunting (if our Himalayan species be really identical with the European species which bears this trivial name) breeds throughout the Himalayas west of the Ganges, at elevations of from 4,000 to 9,000 feet.

Eastward of the Ganges I have no note of its occurrence, except as a very exceptional straggler in the lower valleys in the cold season.

The breeding season lasts from April to August, but the great majority lay in May and June. The nest is always on the ground, commonly wedged in under some large stone, or inserted between the blocks of the rough stone walls with which the hill sides are terraced, but occasionally placed at the base of some dense tuft of grass or shrubby bush.

The nest is generally a shallow, loose, but pretty perfect cup, from 3 to 4 inches in diameter, externally composed of grass stems and lined with finer stems of the same and a few horse or other animals' hairs or moss roots. A nest of this species obtained near Kotegurh was a moderate sized pad of grass, about 5 inches long by about 4 broad, and perhaps 2 inches in thickness. Towards one end of this was a beautiful little saucer-like cavity, perfectly circular, about 2 inches in diameter and 0·75 in depth, lined first with very fine grass stems and then again, at the bottom of the cavity, with fine white hairs, but of what animal I am uncertain: they are much too fine for horse-hair.

Four is, I think, the normal number of the eggs; but I have repeatedly found only three more or less incubated, and occasionally five.

This species is very common about Simla, and its eggs are almost as plentiful as those of *Trochalopteron lineatum.*

Mr. E. C. Buck writes: "At Daren, near Soraon (in the Valley of the Sutlej), I found a nest of the Meadow Bunting on the 16th June. The nest was constructed of straw and dry grass, lined internally with fibres and animal hairs. It measured externally about 4·5 in diameter and 3·5 in height, and the cavity was about 2 inches in diameter and nearly the same in depth. It contained when taken three fresh eggs, but when first found on the 14th there was only one. The nest was on the ground, wedged in under a large boulder."

Captain Beavan recorded: "A nest was brought to me at Fagoo dâk bungalow on 4th August 1866 containing two eggs, which have much of the colour of those of *Fringilla cœlebs,* with markings as in *E. citrinella,* that is, they are of a pale pinkish-blue green, with blotches and streaks of claret colour. They measure ·81 by ·62. The nest is fairly made of grass, lined with hair, and was, I believe, found in a low thick bush."

At Murree Captain C. H. T. Marshall tells us that he "found several nests in the middle of June in low bushes or banks."

The eggs of this species are typically moderately elongated ovals, perfect and regular in their shape; they have little or no gloss, and the ground is a very pale greenish-white or grey or brownish stone colour. Their markings consist of the most delicate and intricate tracery of fine dark brown, (in some places almost black,) lines drawn over faint and pale inky purple streaks or marbling. Here and there a black or dark brown spot, like a fly caught in a spider's web, is seen amidst the tangle of lines that so specially characterise the eggs of this species and others of the Bunting family. These lines, I may remark, are commonly mostly confined to the large end of the egg, where they form in some a tangled cap and in others a broad, irregular, but conspicuous zone. I do not think that Dr. Bree's figure of the Meadow Bunting's egg conveys at all a good idea of the eggs of the Indian *C. cia.* The lines are much too few in number and too coarse and thick. Hewitson's figure of the Yellow-ammer's egg much more closely resembles our eggs, but even in this the lines are neither sufficiently numerous nor fine. Anything more elaborate or intricate than the labyrinth-like pattern of hair lines exhibited by some of the eggs before me can scarcely be conceived. These very fine lines, and the manner in which they are disposed about the larger half of the egg, remind one forcibly of the very similar lines met with in the eggs of the little *Drymoipus terricolor.* In size the eggs most closely approach those of the Cirl Bunting, and out of a very large series only one is as large as that figured by Dr. Bree. The eggs of our bird vary in length from 0·72 to 0·92, and in breadth from 0·58 to 0·68. The average of fifty eggs is 0·83 nearly by 0·63. It is just possible, as above noticed, that our Common Himalayan Bunting may require to be separated specifically from the *C. cia* of Europe.

716 *bis.—Fringillaria striolata, Licht.*

The Striolated Bunting is a permanent resident of, and breeds in, all the bare stony hills of Rajpootana and Northern and Western Punjab. It is found, but rarely, in the hills dividing Sindh and Khelat, and very likely breeds there also.

I myself have only taken the eggs near Ajmere on the slopes of the Aravalli, and I can add nothing to my account of their nidification written on the spot, which has been already published and which I reproduce here.

"The breeding season appears to be November and December. The natives say that they also lay early in July at the commencement of the rains, but as to this I can say nothing. The very first birds that I shot on the 2nd November, the day after I arrived here, proved on dissection to be breeding, and out of the oviduct of a female shot on the 3rd I took a nearly perfect though colourless egg. For several days we hunted without success, finding many nests that I believed to belong to this species, and seeing everywhere females about, straws in mouth, but meeting with no eggs. At last on the 12th November I myself accidentally stumbled upon two nests. I was walking slowly and, if it must be confessed, footsore and somewhat despondent amongst the loose blocks and rocky shingles of the southern flanks of the Taragurh Hill, when a female suddenly sprang up and darted off from within 2 inches of my foot. I looked down, and there on the sloping hill side, half overhung by a moderate sized block of greyish-quartz, was a little nest from which the bird had risen, and which I had been within an ace of stepping on. Close at hand were two or three small tufts of yellow withered grass, but these were several inches distant from the nest. This latter (which laid on the hill side was some 3 or 4 inches thick on the valley side and barely three-fourths of an inch towards the hill) was composed at the base, and everywhere externally, of small thorny Acacia twigs and very coarse roots of grass. This however was a mere foundation and casing, on and in which the true nest was constructed of fine grass stems somewhat loosely put together, the bottom being lined with soft white feathers. The egg cavity was circular and cup-shaped, about 2·25 in diameter and 1·25 in depth, and contained two tiny yellow gaped, dusky bluish, fluffy chicks apparently just hatched and one (as it proved) rotten egg.

Scarcely 20 yards further, on a slightly sloping slab of stone, partly overhung by a huge block, between two tufts of dry grass springing from the line of junction of the slab and block, I found a second precisely similar nest, containing two fresh eggs, round which both parents flitted closely all the time I was occupied in examining and securing the eggs and nest, exhibiting no apparent signs of fear.

The three eggs thus obtained were regular, moderately broad, ovals, slightly compressed towards one end but somewhat obtuse at both. The shells were very delicate and had a slight gloss. The ground colour differed somewhat in all three: in one it was pale greenish-, in another pale bluish-, and in the third faintly brownish-, white. All were spotted, speckled, and minutely, but not very densely, freckled with brown; a sort of reddish-olive brown in two; rather more of umber in the third. Small clouds, blotches, and streaks of the same colour and of a pale purple were intermingled with the finer markings. In two of the eggs the markings were far most numerous towards the large end, where in one they are partially confluent; on the third they are pretty evenly distributed over the whole surface, being however rather denser, in a broad, irregular, zone round the middle of the egg.

These eggs remind one no little of those of *Emberiza elegans* figured by Radde (Reisen im Süden von Ost Siberien Taf V), but are not nearly so broad. They are not very unlike the egg of *E. pusilla* as figured by Bree, but they are narrower and more oval.

On the 16th, near the base of Taragurh Hill, I found another nest, precisely similar to that already described, containing two fresh eggs. These were of the same general type as those already described, but were much more strongly marked. They were richly freckled and mottled with a fine umber brown on a pale greenish-white ground, the markings being in both most dense at the large end (where there was a conspicuous confluent zone), and almost wanting at the smaller end. The purple spots, well marked on the first three eggs, were entirely wanting in these. As usual we captured the female bird without the slightest difficulty.

These five eggs (all I have as yet obtained) have varied from 0·73 to 0·75 in length, and from 0·48 to 0·53 in breadth.

The nests from which these eggs were taken were all at an elevation of about 2,000 feet above the sea level, but we found others later (empty or containing young ones) from 1,500 to 2,600 feet. Early on the morning of the 19th November I climbed up the Mudar Shah Range (on the opposite side of the Ajmere Plain to the Taragurh Hill), which is very nearly, if not quite, 2,600 feet high. On the highest pinnacle of the long knife-like ridge a tiny square temple is perched, at one season of the year a place much resorted to by pilgrims. Inside the temple the whole upper portion of the domed roof is thickly encrusted with what I may term *confluent* nests of our Common Swift *(Cypselus affinis)*, a mass of feathers, straw, wool, and the like cemented together with inspissated saliva. All over the exterior of the temple are little arched recesses sunk about 8 inches in the masonry, and in one of these, about 5 feet above the plinth, one of my people discovered a female *E. striolata* sitting on her nest. Going to the spot I stood with my eyes within 2 feet of the bird. She however never moved, but sat calmly eyeing me with her bright dark eye. She looked so nice, and sleek, and cosy that I hesitated to disturb her, but the eggs of this species were almost, if not entirely, unknown in European collections, and I thought it only right to secure all I could; so I emptied a cap-box into my pocket and lined it with some soft rags torn to shreds, and then put my hand out gently to the nest. Away flitted the old bird, disclosing alas! three fluffy nestlings. I drew back my hand, and that very instant the female returned and had the chicks under her. They were very young, and the morning air on this lone pinnacle very cold, and hence her extraordinary tameness.

The nest was built on the flat bottom of the niche, was perfectly circular, th an external diameter at bottom of about 5½ inches and an internal at top of about 2½. The lower portion was composed of fine twigs, the upper portion and the lining of the cavity, so far as the young ones allowed this to be seen, of fine grass stems. Altogether the nest was about 2½ inches high and very neat and symmetrical.

Judging from my present experience, I should say that three was the full number of eggs usually laid.

718.—*Citrinella Stewarti, Blyth.*

I have never found a nest of the White-capped Bunting, though I have had its eggs sent me from both Busahir and Kooloo, and I know that it also breeds in Cashmere and in the hills about Murree.

From this latter locality Captain Marshall records that "the nest is roughly made of roots and fibres, situated in a low bush near the ground. The eggs, four in number, are dusky white, spotted and blotched with different shades of black and grey. Size 0·8 by 0·6. Breeds in the latter end of June from 5,000 to 7,000 feet up."

Dr. Stoliczka tells us that this species "is very common about Chini and farther to the east (in the Valley of the Sutlej), making a nest of coarse grass near the ground in low bushes. I found young birds about the middle of June."

Captain Cock says: "Of the White-capped Bunting I have found nests and eggs on the hills between Cashmere and Murree, and also in the station of Murree itself.

"It breeds in June and July, and the nest is always placed, according to my experience, by the side of some road or path, on the upper bank, upon the ground, and tolerably well concealed by overhanging grass. It is a rather deep cup, and usually contains three eggs of a greyish colour, with vinous blotches and clots chiefly at the larger end."

The ground colour of the eggs is white, mottled and clouded all over with pale purple grey or slatey grey, for the purple tinge in some eggs is hardly perceptible. Above the grey or purple markings are a few, small, very dark brown, irregularly-shaped spots. Some of them are slightly inclined to be of a short, streaky, or Bunting character, but the majority are ordinary spots. The eggs vary in shape a great deal; some are short, broad, regular ovals; others elongated and a good deal pointed towards the small end. The shell is fine, but there is only a mere trace of gloss.

In length the eggs vary from 0·72 to 0·8, and in breadth from 0·57 to 0·61; but the average of ten eggs is 0·78 by 0·59.

719.—*Citrinella fucata, Pall.*

The Grey-headed Bunting breeds throughout the valleys of the Sutlej and Beas, and the hills westwards of this to Hazara, at elevations of from 6,000 to 8,000 feet.

It lays from the middle of May to the middle of July, so far as I yet know, and very possibly both earlier and later.

The nest is usually placed on the ground, at the root of some little dense tuft of grass or stunted bush, or under some large stone well concealed by the surrounding herbage; but I have had one nest brought to me said to have been found in a bush nearly a cubit above the ground.

The nest is saucer-shaped, or, perhaps I should rather say, shallow cup-shaped, composed almost entirely of dry grass, and lined with very fine grass stems and a little hair. It is perhaps a neater and certainly a denser and heavier nest than that of *cia*, but both are much the same size and very similar in other respects.

Four seems to be the regular complement of eggs.

Mr. E. C. Buck writes: "On the 25th June 1869 I found a nest of the Grey-headed Bunting above Kotegurh. It was placed under a small furzy bush on the ground, and was constructed of dry grass, coarse and loose outside, fine and tolerably close inside. The exterior diameter was 4 inches, the interior diameter 2¼ inches, and the depth 1¾ inch. It contained three fresh eggs."

It has been remarked that "this species, which is one of the most curious of its genus, is distinguished from all the others by the length of the tertiaries which cover the primaries throughout nearly their whole length, and by the claw of the hind toe being a little longer and less curved than ordinary, which latter circumstance, *recalling to our minds the Larks, Pipits, Wag-tails, and other birds which mostly frequent the ground*, leads me to suppose that this Bunting differs in its mode of life from all the other members of the genus, which, as is well known, gives the preference to trees. Pallas indeed says that it inhabits the islets and meadows of *Dauria*." Now, the eggs of this species are by no means of the ordinary Bunting type. The only Bunting's egg of which I have seen a figure which they at all resemble is that given by Bree of the egg of the Black-headed Bunting (*Euspiza melanocephala*). Like the eggs of *Melophus melanicterus*, there is something of a Pipit and Lark-like character about them. In shape they are long, regular ovals, somewhat pointed towards the small end. The ground colour is a very pale greenish grey or white *tinged* with greenish-grey, and they are speckled and freckled pretty well all over, but far more densely at the large end, where there is an irregular mottled cap or zone, with dull, rather pale, somewhat reddish or purplish-brown. They have little or no gloss, and in shape are more elongated and oval than those of *E. cia*.

In length the eggs vary from 0·76 to 0·91, and in breadth from 0·57 to 0·62.

721.—*Euspiza simillima, Blyth.*

Mr. Gray separates the Indian Black-headed Corn-bunting, under Mr. Blyth's name, from the very similar south-eastern European bird, *E. melanocephala*, Scop. All *à priori* reasoning is opposed to their being distinct, but as Mr. Gray had specimens from both localities before him, while I possess only Indian ones, I follow him, though very doubtingly. I do not at all myself believe that this species breeds within our limits, but it is still worth while drawing attention to what Burgess says.

He mentions that "the patel, or head-man, of the town of Jintee, near the River Bheema in the Deccan, assured me that these birds, or some of them, remain to breed in the thick Babool copses that clothe the banks of the river near that town; but I did not observe the nests or eggs. I believe that the greater part migrate much about the same time as the Rose-coloured Pastor."

It is just possible that some few do remain to breed. Of the nearly allied *E. luteola*, Latham, Mr. F. R. Blewitt records having seen a pair in the neighbourhood of Jhansi on the 25th August 1868. These, however, may very probably have only just arrived.

724.—*Melophus melanicterus, Lath.*

The Crested Black-and-chestnut Bunting breeds only sparingly in the plains of India, and, so far as I know, only in the Central Provinces, parts of the North-West Provinces, and the Punjab. At Mount Aboo, the loftiest of the Aravallis, it breeds up to an elevation of 4,500 feet. Throughout the Himalayas, from Nepal to Murree, it breeds at all elevations from 2,000 to 5,000 or 6,000 feet, and it also nests occasionally in the various Dhoons, Terais, and Bhabhurs that skirt the bases of these mountains. In the Himalayas the breeding season extends from April to June. In the plains and on Mount Aboo July and August appears to be the months in which it lays.

The nest is placed in holes, in banks, or walls, on the ground under some overhanging clod or rock, or concealed in some thick tuft of grass, and very exceptionally (I have only seen one such) in a low thick bush within a few inches of the ground. The nests vary a good deal: they are often very slight, loosely put together, shallow saucers, composed entirely of fine grass roots without any lining: at other times they are neat compact cups, made with grass or grass and moss, and lined with fine grass, fern and moss roots, vegetable fibres, or even horse-hair. I have seen loose straggling saucers 6 inches in diameter with a cavity barely an inch in depth, and I have by me to this day neat cups little more than 4 inches in external diameter, and with a deep circular cavity little more than 2 inches across and nearly as deep as wide.

They lay three to four eggs, quite as commonly the latter as the former number, but I have never seen or heard of more being found.

Writing from Jhansi Mr. F. R. Blewitt tell us that this species "breeds only in July and August. I think my experience is, however, confined to two nests: one was found at the base of a small Plum bush near to a wall; the other in a hole in a wall. The nests are exact counterparts of each other; on the outside they are made of very coarse grass and roots. The egg cavity, cup-shaped, has first an intermediate coat of fine khus, over which again is a complete lining of horse-hair. The outer diameter is about 4·8, inner 2·6, and depth of cavity 1·4. The nests are compact, especially the inner part of the structure, and neatly made.

"I have only seen this bird at Bubeena and Talbehut, and in pairs. On one occasion I saw five or six together on the Talbehut fort wall. Their favorite resort is old buildings and walls, to which the birds confine themselves, seldom going far away from them. The male has a peculiarly soft, melodious note, repeated at intervals.

"The birds feed on the ground at all times of the day, and their food appeared to consist of small grass seeds.

"Three appears to be the regular number of eggs. They are of a dull whitish-grey, with a sprinkling of light brown spots."

Dr. G. King furnishes the following account of its nidification on Mount Aboo:—

"It breeds here I should say in the rains. Two nests observed by me were found (1) 18th July and (2) 1st August.

"The first was situated in a niche in the face of a large stone on the banks of a rocky stream near the Gaomukh, Aboo, at an elevation of about 4,500 feet. The niche was concealed by a tuft of grass. The height of the nest above ground was 3 feet. The second nest found on the 1st August was situated in a dense patch of wild Balsams which cover a smooth slope near a very rocky place behind and above Major Impey's house. Elevation about 4,200 feet. The nest was capitally hidden, quite on the ground, and wedged in between the stems of some wild Balsams.

"Both nests were precisely similar in shape, sub-hemispherical, slightly flattened and enlarged below; the egg cavity deep. The nests in texture were rather loose, but the egg cavity closely and compactly lined. The material consisted entirely of one kind of fine dry grass. The side walls of one nest were about 0·75 thick, the bottom 1·5 thick.

"The egg cavity was 1·75 deep and 2 inches wide.

"The first nest contained three eggs, which were taken, preserved, and sent to you. No. 2 contained three young, evidently just hatched. On returning to look at the nest on the 3rd August I found the young gone and the nest pulled to pieces.

"During the months from April to the middle of August I hardly ever observed this bird in any other than rocky places. It was then very common at Aboo.

"On revisiting Aboo, (22nd September to 5th October,) I found this species in moult, not nearly so common as it was in the hot weather and rains and not so much confined to rocks.

"It is a vivacious rather bold little bird with a pretty little simple note. I think it must often build in deep chinks in the rocks, as, though I searched repeatedly for its nest, I found only two: my shikaree found a third."

From Murree Captain C. H. T. Marshall tells us that this species "breeds here in June in banks; nest made of grass. Eggs white, thickly mottled with brown."

Captain Hutton remarks: "On the 6th June I took a nest of this bird from the Dhoon, where it builds on the ground, placing the nest on banks and hedgerows, or beneath the ledge of some bold rock at the side of a ravine. It is chiefly composed of moss loosely put together with a few fragments of dead leaves without any interweaving, and is lined with very fine roots and black fibres of ferns resembling horse-hair. On the 14th of the same month I procured another similarly constructed. The one contained four and the other three eggs of a dull stone grey colour, tinged and spotted with dull purplish-brown, and chiefly so at the larger end."

In Kumaon Mr. Brooks found this species laying in the middle of May. He says: "This bird is common in the open country. The nest is placed in the broken terrace walls, at the foot of a small bush or tuft of grass. I found one in a small bank about 3 feet high. The nest was placed about 2 feet from the ground at the roots of a scrubby bush. It was composed of roots, fibres, and grass, and lined with hair. There were four eggs: another nest had three only. The ground colour was a dull white with a shade of green, thickly speckled and spotted with reddish-brown and purplish-grey. The egg is not lined like a Bunting's. I shot the old birds in each instance. The song of the male is a monotonous one of two or three notes only constantly repeated. The dark chestnut plumage is not assumed till the second year, and young males breed in their first plumage which exactly resembles that of the female."

Mr. Hodgson has the following note on the nidification of the Crested Black Bunting.

"*April* 15*th, Jaha Powah.*—Wild uplands of level and partial cultivation. Found a nest in a cultivated field, laid amongst clods like a Lark's nest; is small and shallow, but still of decided shape and firm make, composed of hard thin grass, fibres, and hairs; circular, the cavity 2·5 in diameter and 0·6 deep. Three eggs, bluish ground like milk and water, spotted with dark reddish-brown chiefly at the large end."

The notes add that this species generally make their nests on the ground under the shelter of some clod or tuft of grass. The bird scratches a small depression, and then twists together a small, flat, circular nest of roots and grass.

From Sikhim Mr. Gammie remarks: "With us the Crested Black-and-chestnut Bunting breeds in May; it breeds at low elevations from 2,000 to 4,000 feet; it chooses open and cleared land, and builds its nest on the ground, often under the shelter of fallen trunks of trees or in banks by the sides of roads. The nest is cup-shaped but shallow as a rule, composed of dry grass and lined with a few root fibres. One I measured had an external diameter of 4 inches and was 2 inches high. The cavity was 2½ inches across by alittle over an inch in depth. They lay four to five eggs; at any rate I have never found more."

The eggs of this species closely resemble, though differing in size and shape, some types of the eggs of *Mirafra erythroptera* and some of those of *Thamnobia cambaiensis*. They vary a good deal in shape, but typically are rather broad ovals somewhat obtuse at the small end; specimens, however, often occur very pointed at this end. The ground colour is a pale greenish-white in some, and pinkish or brownish white in others; and they are thickly speckled and spotted, and in some more or less freckled and mottled, with red, purple, and reddish or purplish brown, the markings of any one egg being usually unicolorous. They are always most dense at the large end, where in the majority of eggs they form a more or less conspicuous but ill-defined and irregular mottled cap. They have little or no gloss. The markings entirely want the bold jagged line character so characteristic of the eggs of many Buntings. In some eggs the markings are so closely set as to leave scarcely any of the ground colour visible, and to give the whole egg a reddish-brown or dingy brown mottled appearance, while in a few the small end of the egg is almost entirely devoid of markings.

In length these eggs vary from 0·68 to 0·86, and in breadth from 0·6 to 0·76; but the average of twenty-two eggs is 0·79 by 0·63 nearly.

725.—*Pycnorhamphus** *icterioides, Vigors.*

Common as is the Jet-gold Grosbeak in the Pine woods a few miles north of Simla, I have never succeeded in obtaining an egg there, though I have had barely fledged ones repeatedly brought me. They breed in all the Pine forests of the Himalayas south of the first snowy ranges and west of the

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* I think that the present species, *carneipes* and *affinis*, must be generically separated from the true Hawfinches and the American *Hesperiphonas*. I, therefore, propose for them the generic name *Pycnorhamphus*, with the present species as the type.

Ganges, at elevations of from 6,500 to 9,000 feet. Many people have found their nests with young, but, so far I know, Captain Cock is the only person who has taken their eggs.

This gentleman tells me that he "found this bird breeding in the station of Murree and also in Cashmere. May and June is the usual time. My first nest, containing three eggs, was taken on the 28th May, at 8,000 feet elevation, upon a sapling Lime. I climbed up and found three eggs in the nest, which was constructed of a few twigs and grass, and lined with stalks of Maiden-hair fern and fine roots. I shot the female as she left her nest.

"Nests subsequently found seemed to have more moss about their external structure than this one; but though I found nests and young ones, I never again succeeded in getting the eggs."

From Murree Captain C. H. T. Marshall writes: "We were unlucky with this bird's nest. As the first one we found was a new one, and the climber stupidly destroyed it, the next one had young ones. They breed very high up in the Himalayan Spruce Fir. Captain Cock got three eggs last year in Cashmere. They are white, beautifully marked with broad longitudinal dashes of light and deep rufous brown at larger end. They are 1·05 long and 0·8 broad. These birds breed at high elevations, never under 7,000 feet."

Mr. Brooks thus describes the eggs: "Texture smooth and similar to that of the English Hawfinch's egg. In shape the egg is broad and rapidly diminishes towards the small end. There is a slight gloss on the egg. Ground colour pale greenish-grey, with a very few blackish-brown spots over the whole surface and at the larger end, and very near the end, is a zone of lines and spots of the same dark umber brown, intermixed with some dark grey coloured lines and spots of a Bunting-like character. Some eggs of the English Hawfinch in character strongly resemble the eggs of this kind, both in ground colour and mode of marking."

The egg is at present one of the very rarest in our collections, so I add also my own description.

The eggs of this species to judge from the specimen I possess, given me by Mr. Brooks and taken by Captain Cock, are a very pale greenish-grey or greyish-white tinged with green, with numerous blackish-brown tangled lines, some thick and bold, some very fine, twisted about and intertwined in a small zone immediately about the large end, all more or less underlaid by faint inky purple clouds. Besides this zone a very few blackish spots and one or two streaks appear on other portions of the egg's surface, but these are very few and far between.

It measures 1·03 by 0·8.

732.—*Pyrrhula aurantia, Gould.*

I know nothing personally of the nidification of the Orange Bull-finch. Captain Cock says: "I shot this bird in the Sonamerg Valley (Cashmere) in June. They were then in pairs and evidently just about to breed. I did not succeed in taking their nests owing to my time being so limited, and the following year, when I wished to enter Cashmere to continue my observations from the end of June, where I had left off, to the end of August, I could not go because I could not get a pass, there being none available. Had I been a loafer or anything else than a British officer, no one would have gainsayed my going."

737.—*Carpodacus rubicilla, Güld.*

Dr. Stoliczka gave me a warm lining of a nest, composed chiefly of goats' hair with a little fine vegetable fibre intermingled, and with it a note recorded at the time, stating that this, with the four eggs which it contained, had been found at Ankhang, a camping-ground in the province of Rupshu in West Thibet, at an elevation of 14,000 to 15,000 feet below the Parang Pass, on the 7th July 1865. He was not quite sure what species the eggs belonged to, but he knew it was one of the Rose-finches, and that he had preserved one of the parents. Now, the only one of the Rose-finches whose nest he refers to in his ornithological observations on the Sutlej Valley, published in the Journal Asiatic Society, 1868, p. 60, is that of a species which he identified at the time as *Pyrrhospiza punicea.*

He says: "I found the nest made of coarse grass in Rupshu, near the Tsomourie Lake, on the ground in a little bush of Thibetian furze: eggs greenish, with some dark brown spots."

There can be no doubt that this nest is the one he gave me, but looking to Von Pelzeln's remarks on Stoliczka's birds (Ibis, 1868, p. 318), it would appear that the birds that he took for *Pyrrhospiza punicea* were really *Carpodacus rubicilla,* the specimens of which came from this very Ankhang below the Parang Pass, where the *original* note, still in the nest, says that it was found, and "one of the parents stuffed." I think, therefore, there can be no reasonable doubt as to the authenticity of the nest or eggs. The nest was doubtlessly made entirely of coarse grass and warmly lined with the lining now in my possession. The eggs are moderately elongated ovals, rather pointed towards one end. The shell is smooth and fine, but has only a very slight gloss. The eggs are a pale greenish-blue, with a few good sized spots and many tiny specks of black or blackish-brown confined entirely to the broader half of the eggs.

The eggs vary from 0·96 to 1·0 in length, and from 0·67 to 0·7 in breadth.

743.—*Propasser pulcherrimus, Hodgs.*

All that we know of the nidification of the Beautiful Rose-finch is that Mr. Hodgson figures a beautiful, deep, cup-shaped nest as belonging to it, placed amongst a clump of close growing twigs, and composed of fern leaves and grass. He gives the exterior dimensions: as diameter 3 inches, height 4·75: the interior as diameter 2 inches, depth 2·12. He neither describes nor figures the egg, nor is the date on which the nest was obtained noted.

748.—*Callacanthis Burtoni, Gould.*

Of the nidification of the Red-browed Finch I know nothing myself. Captain Cock remarks: "I observed this bird building in Pine trees at Sonamerg (Cashmere) in June, but alas! I had to leave ere the eggs were laid. It makes rather a large nest of moss, lined with roots and stalks of fern, placed on the fork of one of the smaller boughs in a Pine in dark forest situations."

750.—*Hypacanthis spinoides, Vig.*

The so-called Indian Siskin is not a Siskin at all, neither in note nor in shape of bill, and is certainly not a *Chrysomitris.* The note is very like that of a Green-finch; but structurally our bird is not a *Chloris,* and it seems to me that either one must unite the whole of the true Finches under one genus, *Fringilla,* or one must separate the present species as a distinct genus and adopt, as I have done, Cabanis's name—*Hypacanthis.*

Although this bird breeds very freely in all well wooded hills in the interior of the Himalayas, at elevations of from 4,000 to 7,000 feet, I seem to be the only person who has taken the nest in recent times.

The following is a note that I recorded at a time when I had recently taken several nests:—

"Lays in July and August, at least in the neighbourhood of Simla, where alone I have found its nest. The latter is placed in very various situations, and always so well concealed that, except by watching the birds early in the morning when both parents are generally feeding in the neighbourhood of the nest, it is almost impossible to discover it. I have found the nest (August 18th) with three young ones, some 30 feet from the ground, nearly at the top of an Evergreen Oak, and I have found it in a Deodar bush not 3 feet from the ground on the lowest bough about 6 inches from the main stem. Once I found it against the trunk of an aged Deodar, nearly buried in a huge clump of moss, much of which the birds had attached to the sides of the nest. Usually the nests are seated *flat* on some bough or wide-spreading fork, and, as far as my experience goes, this bird prefers the Deodar to any other tree. The nest is a most beautiful structure, cup-shaped, woven of the finest grass roots with a good deal of hair interwoven in the interior and with much moss blended with the exterior. It is a very solid and compact little structure. The cavity, which is generally truly circular, varies from 2 inches to 2·5 in diameter and from 1·1 to 1·4 in depth. Exteriorly the diameter of the real nest does not exceed 4·5, and often falls short of this; but the nest is at times so blended with moss *in situ* that it is difficult to say where the nest ends, and you may have to tear away a patch 9 inches square to get it. The eggs are usually three in number, and when fresh are a delicate, slightly *greenish,* white, with an irregular ring of minute blackish-brown spots round the large end, and occasionally a very few similar specks on the body of the egg. The shell is exquisitely fine and delicate, and the yolk shows through quite plainly. It is this that gives a certain greenish tinge to the unblown egg, for when blown the shell is a very delicate pale *bluish*-white. In shape they are moderately broad ovals, considerably pointed at one end."

Mr. Hodgson's notes inform us that our Indian Siskin breeds in the central hilly region of Nepal from April to July. Its nest is built in open forests or groves, between three or four slender branches, and is compact and cup-shaped, composed of moss and moss roots, and closely lined with the latter. One nest, of which he gives the dimensions, measured externally 3·5 in diameter and 2 inches in height, internally 2·1 in diameter and 1·1 in depth. The eggs, he says, are three or four in number; the one he figures is a very regular broad oval, measuring 0.75 by 0.59, a uniform pale green, *unspotted;* All *I* have ever found were spotted. Above I have given the description that I wrote when I took the eggs: below I subjoin an exact description of them as they now appear in my collection. They have slightly changed colour.

The eggs are oval, pointed towards the small end; the shell is delicate and glossless; the ground colour is a very delicate pale sea green, and the only markings are a number of black specks, almost without exception, contained within a broad zone at the large end. One egg, besides these black specks, has intermingled with them very faint reddish-purple specks. I have never seen the egg of the European Siskin, but the figure of it in Mr. Hewitson's 3rd edition does not appear to me to resemble very closely those of our bird.

In size they vary from ·72 to ·76 in length, and from ·54 to ·58 in breadth; but ·75 by ·55 is, I think, an average dimension.

751.—*Metoponia pusilla, Pall.*

Dr. Stoliczka tells us that "the Gold-fronted Finch comes only in winter to the lesser ranges of the North-West Himalayas. It breeds east of Chini, at elevations of 10,000 feet and above, as likewise in Spiti, Lahul, and Ladakh. I found old nests made of thin twigs, laid out with grass and wool, on shrubs or low trees of *Juniperus excelsa.*"

752 *ter.*—*Montifringilla Adamsi, Moore.*

Dr. Adams tells us that he found his Mountain Finch "common on the bare and barren mountains of Ladakh and Little Thibet, and feeding on the seeds of the few plants found in these desolate and dreary-looking mountains. Its cry is like that of a Lark, and its habits on the ground are very similar. The nest is composed of grass, and generally placed in the long dykes, built by the Tartars over their dead, so frequently to be seen in that country."

754.—*Mirafra assamica, McClell.*

Dr. Jerdon tells us that "the Bengal Bush-lark is found throughout all Northern India to the Nerbudda, extending eastwards into Assam." This appears to me to convey a somewhat erroneous conception of the birds habitat: it is found *nowhere* in Northern India, except in the comparatively humid districts that fringe the skirts of the Himalayas east of the Jumna. From the greater portions of Oudh and the North-West and the Central Provinces, from the whole of the Punjab and Rajpootana, it is, according to my experience, entirely wanting. Throughout Lower and Eastern Bengal, in the better watered and wooded tracts of the Central Provinces and Chota Nagpore, in Assam and Cachar, and in the Dhoons, Terais, and Bhaburs that lie at the feet of the Himalayas, and the immediately adjacent districts of Behar, Oudh, and the North-Western Provinces, it is a permanent resident.

It lays from the middle of May to the middle of July, constructing on the ground, generally in some hollow, concealed and overhung by tufts of grass, a loose and usually partially domed circular nest, composed of fine dry grass and grass roots. Sometimes the nest is a mere pad of grass, perhaps 4 inches in diameter and an inch in thickness, with a slight central depression. More commonly it is wholly or entirely domed over, sometimes with the entrance at the top, and sometimes at the side, never very compact in structure, often so loose that you can see the eggs through the straggling roof. I once found a nest entirely under a large clod of earth, which completely overhung and concealed it; in this case the almost invariable grass tuft was absent. The largest and most perfect nest I ever saw was rather more than a hemisphere, the curved surface uppermost, 7 inches in diameter and 5 inches high, and with a neatly made circular aperture 2 inches in diameter *nearly* at the top. More roots had been used in this than is customary, and these had been specially used internally, at the bottom, as if to form a lining, but as a rule there is no pretence for this latter. Most nests are loose, flimsy, things that will not bear removal.

Five is the full complement of eggs, but four, three, and even *two*, hard-set eggs or young are often found.

From Saharunpoor Captain G. F. L. Marshall writes: "Builds in the first half of June a nest of grass and roots roofed over and placed against a tuft of grass on the ground. The bird is common in the north of the Saharunpoor District, but the nest is very difficult to find. On 7th June I found a nest with one fresh egg and one addled, on the 19th June one with three fresh eggs, and on the 30th June one with five fresh eggs. The nest has a side entrance, is very loosely put together, and has no lining."

Dr. Jerdon says: "One (nest) which I obtained in Dacca in June was distinctly domed or covered in by turning the stems of grass over, and was very artfully concealed. The eggs are dull greenish-white, with numerous grey and brown spots."

The eggs of this species closely resemble those of *M. erythroptera*, but as a body are larger. They are characteristic Lark eggs, with greyish or yellowish white or stone-coloured grounds, very thickly freckled and spotted, and sometimes finely streaked, with yellowish or pale purplish brown. The markings are commonly somewhat more dense at the large end. In shape the eggs are slightly elongated ovals, but little pointed towards the small end. They have as usual a faint gloss.

In length the eggs vary from 0·79 to 0·92, and in breadth from 0·57 to, 0·65; but the average of twenty-six eggs measured is 0·83 by 0·61.

755.—*Mirafra affinis, Jerd.*

I have never found the nest of the Madras Bush-lark. Dr. Jerdon states that "it breeds on the ground, making a loose nest of grass, and lays three or four eggs, greenish-grey, with spots and stains of brown and dusky."

Colonel Tickell remarks: Nest ordinary, of grasses, 4 inches in diameter, placed on the ground under shelter of clods, tufts of grass, &c., in fallow fields or open patches in jungles. Eggs, three or four, ordinary, rather lengthened, 0·81 by 0·56, dirty ashy-white, with stains, smudges, and specks of dusky, ashy, and rusty brown."

755 *bis.—Mirafra microptera, Hume.*

This is the Burmese Bush-lark which I characterised in STRAY FEATHERS, Vol. I., p. 483.

Mr. Oates tells us: "I found the nest on the 25th July at Boulay, near Thayetmyo, with two eggs and one young bird just hatched. It was on the ground in a hoof mark, protected and concealed by grass, slightly domed, composed entirely of fine grass and fibres.

"I have now only one egg. This measures 0·83 by 0·6. The ground colour is white. The whole egg is thickly spotted with rusty brown and dark brown spots, very thickly at the thick end where they form a distinct ring."

756.—*Mirafra erythroptera, Jerd.*

Dr. Jerdon tells us that "the Red-winged Bush-lark is found in the tableland of the Deccan extending south to the edges of the Carnatic, and it is found also in the hilly district of Monghyr;" but he did not observe it in Saugor or Mhow.

Now, this again conveys a scarcely correct notion of the distribution of this species. *This*, and *not assamica*, is the Bush-lark *par excellence* of Northern India. Throughout the Central Provinces, the North-Western Provinces, the Punjab and Rajpootana, (except at the extreme west,) and the drier portions of Oudh, this Lark abounds, and is perhaps the commonest resident Lark, throughout this vast tract, as a whole. It breeds from March to August. The nest is never (so far as I know, and I have seen fifty) anything more than a smaller or larger pad of finer and coarser grass, in which at times a little vegetable fibre is intermixed, with a slight central depression. The situation chosen for the nest varies. I have found them in a hoof print, in a perfectly bare plain, in an equally bare field under clods of earth, in open country at the foot of some dense tuft of grass, in scattered jungle, at the base of Caper bushes, or even young Babool or Neem trees, and in amongst grass. Later, when the rains have set in, heaps of kunker by the road side, or heaps of ballast beside the railway, are often selected, and Mr. Brooks tells me that on one occasion he found a nest containing the full complement of partially incubated eggs amongst the ballast *between* the rails and almost under one of them, so placed that trains were perpetually passing over the birds, the rim of the wheels passing within 2 or 3 inches of her head.

Four is, I think, the regular complement of eggs; but I have often found three hard-set, and once or twice five fresh, ones.

The eggs are typically nearly perfect ovals, neither very broad nor very long, and but little pointed or compressed towards the smaller end; indeed, some of the eggs can scarcely be said to have a smaller end. They vary less, I think, in size and shape than those of any of the other species of this genus, but in colour they differ more. The ground colour, which harmonizes with the general colour of the markings, ranges through greenish-, greyish-, pinkish-, yellowish-, and brownish-, white, in some the tint being very very faint, in others fairly well marked. They are invariably more or less finely speckled and spotted all over, more hazily and confluently in some, more clearly and definedly in others. The colour of the specks and spots vary in different eggs from red, brownish-red, and inky purple, to reddish-, yellowish-, and olive-, brown, the markings of each egg being commonly unicolorous; and while in some the markings are fairly bright and deep, in others they are very faint and feeble. The uniform speckly character of the markings is typical in this species, but in a few eggs the great density of the spots towards the large end renders them more or less confluent there, and produces very imperfect and irregular zones or caps. All the eggs have a little gloss, but some have a good deal more than others.

In length they vary from 0·7 to 0·82, and in breadth from 0·55 to 0·65; but the average of twenty-nine eggs is 0·76 by 0·59.

757.—*Mirafra cantillans, Jerd.*

The Singing Bush-lark, as Jerdon calls it, breeds in many places in the North-Western and Central Provinces and the Punjab. The bird has always been a puzzle to me. At distances of 50 miles or more apart you come upon small colonies, while in hundreds of intermediate and apparently precisely similar localities you never see it. I have had its eggs sent me from near Lahore and from Hansie, have found them in Goorgaon and in the south of the Cawnpoor District, and again have received them from Jhansi.

The breeding season lasts from March to August. The nest, like that of *M. assamica,* is sometimes a mere pad, sometimes a domed nest, composed of rather fine dry grass and roots, and sometimes slightly lined with finer grass or roots, but usually without any pretence for a lining. It is placed mostly amongst thick grass and is well concealed, but at times in little frequented localities, such as the ravines of the Jumna on the south of the Cawnpoor District, it will be found in a slight depression of the soil or niche in a bank quite open to view.

Four is the largest number of eggs I have ever found in one nest.

From Hansie Mr. W. Blewitt wrote one year: "I secured one nest of this species in the Dhana Beer, or jungle preserve, near Hansie in July. I shot the parent bird at the time and sent it with the eggs. The nest was formed of fine grass, almost meeting above and with a hole at the side for ingress and egress, and though much smaller reminding one of a Munia's nest. It was placed on the ground in a tuft of coarse grass at the root of the tuft, and contained three fresh eggs.

"This bird is very common in this preserve. I shot, if I remember right, more than a dozen specimens there in one morning, but it so carefully conceals its nest, that, though constantly searching for it, I only succeeded in securing this single nest."

Next year he was more successful, and again wrote saying: "This species breeds I found plentifully in the Dhana Beerh, near Hansie, in March and the early part of April, laying its eggs in a slight depression in the ground in amongst tall grass. It usually lays four eggs, but on the 28th March I found a nest containing seven fresh eggs; whether these belonged to one or more couples, or whether some herd-boy had collected the eggs of two or three nests into one, I cannot say, but certainly one bird was sitting on them all when we found the nest."

I think all these *Mirafras* have two broods in the year, and I suspect that it is for the second brood, when rain is to be apprehended, that the bird most often domes its nest.

From Lahore Captain Marshall writes: "In June I found a nest of this species in the side of a little bank, about 6 inches above the level of the plain. It was a poor badly made thing: there was a little hollow in the earth, and in this was placed a small makeshift sort of nest of grass fibre lined with a little finer material. Three fresh eggs."

The eggs closely resemble, as a rule, those of the other species of *Mirafra*, though some specimens are more streaky and less speckly in their markings, reminding one of some types of our Common Sparrow's eggs. The ground colour is greyish-, greenish-, or yellowish-, white, and some eggs are thickly speckled, spotted, and streaked, and others are uniformly and very densely freckled with different shades of yellowish and sepia brown, with here and there in the spotted types, tiny, very pale inky purple clouds underlying the brown markings. In shape and size they seem to vary more than those of the other species. The shape is normally, I think, a rather long oval, moderately pointed towards the small end, but short, pyriform, and regular broad oval forms seem not uncommon. They have a faint gloss.

They vary in length from 0·72 to 0·9, and in breadth from 0·58 to 0·65.

758.—*Ammomanes phœnicura, Frankl.*

The Rufous-tailed Finch Lark, so far from being, as Jerdon says, rare in the Central Provinces north of the Nerbudda, and unknown in the North-Western Provinces, is common enough in the Sumbhulpoor, Jubbulpoor, Saugor, and Jhansi Districts, and in Gwalior, and is by no means very rare in Etawah, Agra, Allygurh, &c., and in the eastern portions of Rajpootana. About the Sambhur Lake, for instance, it is very common. Further west, and throughout Sindh and the trans-Jheelum and Indus, Punjab, it is replaced by the next species, *A. lusitania*.

It is not, so far as I know, at all a migratory bird, though it shifts its feeding-ground according to season; and it is to be found breeding, I believe, in all the localities mentioned, as also in many parts of Southern India, where the climate and soil are not too damp to suit it.

The breeding season, so far as I know, lasts from February to April. Tickell, as it will be seen, says that he found its eggs in June, but one can never feel sure that he is correct, and the nest he describes is more like that of one of the *Mirafras*.

The nests that I have seen have all been very slight circular pads of fine grass or roots, sometimes sparsely lined with softer materials, placed in some slight natural depression, or a tiny hollow scratched by the birds themselves, under the shelter of some clod or large stone, or at the foot of a tuft of grass or dwarf bush.

Four is the full complement of eggs. I have never found more, and *per contra* have repeatedly found three more or less incubated.

From Raipoor Mr. F. R. Blewitt writes: "This Rufous-tailed Lark pairs in February and breeds in March and April, though I had hard-set eggs brought to me in the beginning of May. It makes its nest on the ground, generally in ploughed lands, often under the cover of a clod of earth. The nest is simply a moderate sized circular hollow in the earth, say about half an inch or so deep, without the 'grass and other materials' referred to by Dr. Jerdon; at least this was the case in the score and odd nests discovered by me and my men. Four is the maximum number of eggs. Its favourite haunts are open plains, stubbles, and ploughed fields; but I never witnessed it, and I have well observed the bird's habits: ascend suddenly in the air by few interrupted shakes of its wings, uttering at the same time a pleasant, loud, whistling note, something like *too-whee* (the note is altogether different), 'and then descend with a sudden fall.' On the contrary it is not 'very rarely,' but *very often,* in the breeding season, that it perches on a low bush or twigs, and utters the meanwhile its short, *twirling,* melodious note."

Dr. Jerdon says: "It makes its nest on the ground of grass and other light materials, generally under the shelter of a clod of earth or tuft of grass, laying three or four eggs, dirty greenish-white, with numerous small brown spots. It breeds about Jaulnah in February and March. Tickell found it breeding in Central India in June."

Mr. E. C. Nunn remarks: "I found the nest at Hoshungabad on the 28th April 1868. It was placed in a cavity of the river bank, and was composed of fine roots of grass, lined with wool and a few feathers. It measured 3·5 in diameter internally, and contained three fresh eggs."

Colonel Tickell's account is: "Nest flat, shallow, circular, 4 inches in diameter, placed in meadows in long grass, which it entwines over the nest, leaving only a small passage open. Eggs four, lengthened, blunted, 0·87 by 0·62, dirty greenish-white, thickly sprinkled with pale and dark brown confluent spots. Lays in June."

The eggs are larger than those of any of the preceding species. They have but little gloss, and in shape are moderately elongated ovals slightly pointed towards the smaller end. With the exception of being somewhat narrower, they very closely resemble Mr. Bree's figure of the egg of *A. lusitania.* The ground colour is creamy or pale yellowish-white, pretty thickly freckled and speckled all over, but most densely at the large end, with yellowish or at times somewhat reddish brown, with which freckling very pale inky purple blotches or spots (only faintly visible) are here and there intermingled.

The eggs vary from 0·77 to 0·95 in length, and from 0·56 to 0·65 in breadth; but the average of twenty-six eggs is 0·85 by 0·62.

759.—*Ammomanes lusitania, Gmel.*

The Desert-lark breeds throughout the rocky barren hills of Sindh and Western and North-western Punjab. It lays in April, May and June, but I have never myself found the nest or seen it *in situ.*

Captain Cock says: "This Lark breeds in the low hills of the Peshawur Valley. Its nests are abundant in the hills near Nowshera. May and June are the nesting months. The nest is placed under a shelf of rock or flat stones upon the ground, and is constructed of grass stalks lined with fine roots, and the bird piles up little flat pieces of stone all round the nest, just as I have observed *P. grisea* do in that neighbourhood. The eggs resemble those of *P. grisea,* only they are much larger. Three seems to be the usual number, but I think I once took four out of one nest."

The eggs are very regular ovals, some rather broader, some slightly more elongated, and more or less compressed towards the small end. The eggs have a very faint gloss, and the shell is particularly fine and smooth. The ground colour is white, not absolutely pure, but with a scarcely perceptible brownish, greyish, or greenish tint varying in different eggs. The eggs are only moderately thickly sprinkled over with specks and small spots of pale yellowish-brown; these markings are always most numerous towards the larger end, where they form, or exhibit a tendency to form, an irregular, partially confluent, cap or zone, as the case may be; and where these markings are dense, there a number of tiny spots and clouds of pale lilac are to be found intermingled.

In length the few eggs I possess vary from 0·78 to 0·87, and in breadth from 0·59 to 0·62.

760.—*Pyrrhulauda grisea, Scop.*

The Black-bellied Finch-lark breeds pretty well all over the plains of India. The breeding season varies from January to August. They have two broods—the first clutch is commonly laid in February and March, and the second in July and August. The time perhaps varies a little, according to locality, but chiefly according to individual birds. In the same district, Etawah, I have myself found eggs on the 22nd February, 11th, 20th, and 21st March, 4th and 23rd April, 10th May, 28th July, 4th, 17th, and 21st August, so that I cannot believe that locality has much to do with season.

The nest is always on the ground, and placed in some little depression (a hoof-print being a favourite site), at times perfectly exposed to view, at others shaded by a large clod of earth or a tussock of grass. All the nests that I have seen (fully thirty in number) were tiny soft pads, about 3 inches in diameter and about three-fourths of an inch in thickness, composed of thread, soft tow-like vegetable fibre, a few feathers, and a very little fine grass, or at any rate of these same materials in varying proportions. The upper surface, slightly depressed towards the centre to the depth of about half an inch, formed the egg cavity. Two is undoubtedly the normal number of the eggs, but very rarely three are found.

I may note that at Etawah we found one nest of this species also amongst the ballast, between the rails, so that here too the trains must have passed a dozen times day and night over the sitting bird. When we think of the terrible heat glowing from the bottom of the engine, the perpetual dusting out of red hot cinders, it seems marvellous how the bird could have maintained her position.

Captain G. F. L. Marshall remarks: "This species breeds in Alygurh early in May. A nest taken on the 6th contained two fresh eggs. It was placed on a slight ridge in a ploughed field under a tiny sprig of Dwarf (*Bĕr*) thorn. The top of the ridge was slightly hollowed, and the cavity was lined with grass stems with an inner lining of shreds of grass and wool. The nest was very small, even for the size of the bird."

From Futtegurh Mr. A. Anderson writes to me: "The Black-bellied Finch-lark breeds all over the North-West Province from the latter end of February to the end of March. They never lay more than a pair of eggs; these are large for the size of the bird, and minutely freckled with greyish-brown spots on a dirty white ground. At times the spots are more thickly distributed over the obtuse end, frequently coalescing and forming a zone.

"This little Lark breeds almost exclusively on open, fallow, plains, the slightest depression (such as a cow's foot-print when the soil was moist) serving as the foundation for a nest, which is a very loosely put together structure.

"I have found immense numbers of their nests by riding slowly over suitable ground with a line of coolies. The bird sits very close, and flies up into the air from *off the nest, i. e.,* without *first running* before taking wing, so that to mark the spot is an easy task.

"In February 1873 I flushed a bird, as above described, two or three times without being able to detect the nest; and nest there was, because the female came back almost immediately every time she was disturbed. Imagine my surprise at finding the nest in the centre of a lump of cow dung, which must have been quite fresh when some cow or bullock 'put their *foot in it'*.

"The hollow thus made served admirably for a nest, which measured 2¼ inches in diameter by 1¼ inch in depth. It was composed entirely of fine grasses, and as the foot-print had not gone *right through to the ground,* I was enabled to remove the lump of dung without in any way hurting the nest.

"White-ants had left their marks all over the dry dung, so that detection was almost impossible; it was altogether the most artfully concealed nest I have ever seen.

"The male bird takes his turn on the eggs".

Mr. E. C. Nunn says: "I myself found a nest of this species amongst the stones in the bed of the Nerbudda, near Hoshungabad, on the 6th April. It contained three eggs and was a small nest, composed of fine grass roots and pieces of thread."

From Sambhur Mr. R. M. Adam records: "The Black-bellied Finch-lark is very plentiful. It breeds about here from March till August. The first nest which I obtained was found on the 22nd April 1870. As I was riding along the lake edge, I saw a female with a feather in its bill, so I followed it up to its nest. The nest was nearly finished, but contained no eggs. On the 26th there were two eggs, and I think this is the normal number; but I have a record of three being found in one nest. The nest was built well out into the lake bed on the top of a low retaining wall of a salt pan. It was a deepish cup shape, in diameter about 3 inches, with the egg cavity rather less than 2 inches across and half an inch deep. It was chiefly composed of coarse pieces of grass worked carelessly together, and here and there were pieces of cloth and twine of the same material as the salt bags. Round the nest was a belt, about 5 inches broad, composed of small flakes of a saline incrustation about a tenth of an inch in thickness. The pieces varied much in size, but the largest were about an inch long by half an inch broad.

"This nest was comparatively safe, but it is a puzzle to me how others which I have seen on the lake edge escape being squashed by the thousands of bullocks and camels which are continually passing and repassing.

"The eggs are pale yellowish-green in colour, and covered with very minute specks of various shades of brown.

"I may add that I took a nest of this species in Oudh on the 4th May. It contained two eggs."

From Raipoor Mr. F. R Blewitt writes: "This Finch-lark breeds, according to locality, from the middle of March to at least the middle of August, as I had three fresh eggs brought me on the 5th of that month at Saugor. In a slight hollow in the ground a somewhat compact nest is prepared of fine grass and roots. The shelter of a clod of earth or low bush is often preferred for the nest. Three is the largest number of eggs I have seen. Its habits are correctly stated by Dr. Jerdon, but I have never yet seen 'large flocks' of the bird in the cold season, or indeed at any other time. I have occasionally met with a dozen or two together, either on a road or favourite feeding-ground

During the breeding season the male bird does occasionally, as I have witnessed, 'sing in the air like a Lark with expanded wings' for a minute or two. It is common in both the Sumbulpoor and Raipoor Districts."

Mr. A. G. R. Theobald remarks: "I found a nest of this species at Salem on the 21st August. It was merely a small circular cavity in a bare open field lined with a little fine dry grass. It contained three eggs."

Lieutenant Burgess tells us that "this little bird breeds in Western India, during the months of January and February, building its nest in a hollow in the grassy plains which it inhabits."

Mr. E. Aitken tells me that "in Poona it builds all over the rocky plains in the cold season. I have found eggs on the 24th December and on the 12th February. The nests I have seen have always been beside a stone or sheltered by some little plant, and consisted of an oval shaped hollow in the ground, lined neatly with grass. I have found a single egg in a nest, half hatched; but at other times always two. I have seen the male incubating the eggs."

Dr. Jerdon recorded long ago that he "obtained the nest and eggs in February. The nest was composed of woven thread, mingled with some fibres of grass and one or two small fragments of cloth. The sides are hardly raised at all; it was placed in a slight hollow on the open plain, near a river, and contained two eggs of a slight greenish-grey tint, spotted with brown chiefly at the larger end."

The eggs, as might be expected, are as a body smaller than those of any of the preceding species. They are typical Larks' eggs, moderately elongated ovals, somewhat pointed towards one end. The ground colour, yellowish-, greenish-, or greyish-, white, is densely mottled, speckled, spotted, or finely streaked or freckled with various shades of yellowish and earthy brown. The markings are more hazy and indistinct as a rule in this species than in either *Mirafra assamica* or *erythroptera*, and in some are so uniform and confluent as to obscure the ground colour entirely. With the exception of the eggs of *A. raytal*, these are the smallest of all our Indian Larks' eggs. They have, like those of the rest of their congeners, a more or less perceptible gloss.

In length they vary from 0·65 to 0·8, and in breadth from 0·5 to 0·62; but the average of thirty eggs is 0·73 by 0·55.

762.—*Alaudula raytal, Blyth.*

The Ganges Sand-lark breeds along the sandy dunes that fringe this great river and its innumerable affluents, and in similar situations along the Brahmapootra, the Irrawaddy, and the Nerbudda. In the upper portions of the courses of these rivers, to judge from those we know, it is not found, and again when they approach the sea it, I believe, disappears. A broad and tranquil stream, with wide bare banks of sand, is what it loves, and there amid a few stunted struggling shoots of Tamarisk it breeds and may be seen at all seasons.

It lays, so far as my limited experience goes, in March, April, and May, making a tiny circular nest in some little hollow, under a tuft of grass or Tamarisk, or beside and partly under a stranded log, the fragments of some old boat, or a large stone.

The nests are very small, some 3 inches in diameter, pads with slight central depressions or shallow saucer-like affairs, composed of fine grass or dry Tamarisk leaflets.

Two, I believe, is the normal number, but one nest that was sent me contained three.

As regards its nesting on the Nerbudda, which could hardly have been looked for, I may note that Mr. Nunn took two nests, both apparently belonging to this bird, early in May at Hoshungabad. Of one he sent the parent bird, and there can, therefore, be no doubt as to the one nest, though further observations are necessary, as no one else has recorded the bird from the Nerbudda. Both nests were tiny saucer-like fabrics, composed of fine grass and only about 2·5 in diameter. The one taken on the 1st May was placed at the foot of a tuft of coarse grass on the level ground just above a nullah. The other taken on the 6th May was alongside a large stone in the dry sand of the bed of the Nerbudda. Each nest contained a single fresh egg.

The eggs closely resemble those of *P. grisea*. It may be a mere accident, but the specimens I have are less glossy than any egg that I possess of that species, and their markings are finer and more speckly. They are rather elongated, nearly perfect, ovals, only slightly compressed towards one end. The ground colour is greyish or yellowish white, and they are *excessively* minutely speckled all over with yellowish-brown, a few very faint inky purple specks being in one egg intermingled.

The eggs vary from 0·71 to 0·79 in length, and from 0·52 to 0·56 in breadth; but I have too few unfortunately to enable me to strike any useful average.

762 *ter.—Alaudula Adamsi, Hume.*

The Indus Sand-lark represents the preceding species on the great river of Sindh and all its affluents in the plains of the Punjab.

It breeds in March, April and May, but I have never found a nest.

Captain Cock, as far as I know, is the only person who has yet taken the eggs.

He says: "Your little Sand-lark breeds in the sandy islands on the Jheelum during April and May. The nest is usually placed on the north side of, and at the roots of, a small Tamarisk bush; it is a little depression in the soil, lined with fine grass loosely put in, and contains two to three eggs, usually the former number."

An egg of this species obtained on the banks of the Jheelum on the 20th March much resembles those of the preceding species, but it is more glossy, the ground colour is somewhat purer white than either, and it is less densely spotted and speckled, the markings being spots and specks and small smears of pale yellowish-brown, with a few very minute pale inky purple specks and spots underlying the brown markings.

Generally I may add, after seeing several more eggs, the ground colour is du white, spotted and mottled all over, but more thickly towards the larger end, with pale greenish-brown. There are a few spots of grey intermixed with the brown ones, especially towards the larger end.

Three eggs that I measured varied from 0·73 to 0·8 in length, and from 0·55 to 0·57 in breadth.

765.—*Spizalauda malabarica*, *Scop.*

I long ago pointed out that there were two very distinct *Spizalaudas*—one the southern form, which Sykes named *deva*; and the other the northern form, which I named *simillima*. The former is the species to which this note refers. So far as I can at present judge, Scopoli's *Alauda malabarica* was founded on a specimen of what Sykes later called *S. deva,* hence my adoption of the former's specific name.

I know very little myself of the nidification of the Southern Crown-crest Lark, which occurs pretty well throughout the whole *Peninsula* of India in suitable localities, while *simillima* is equally widely distributed through the drier tracts of *Continental* India.

This present species ascends the Nilghiris to heights of 4,000 and 5,000 feet at any rate, and there on the 8th April Miss Cockburn found a nest which she sent me containing three eggs. The nest was a tolerably compact but shallow saucer, composed of grass and fibres and lined with fine roots, placed on the ground under some overhanging tufts of grass. She has also sent me the following interesting note on the habits and nidification of this species. " She says :—

This bird differs from the Sky-lark (*Alauda gulgula*) in never singing while on the wing. He sits on a stone or the stump of a dead tree while performing his part in the general concert, which in the breeding season is heard on every side. With drooping wings and tail erect he continues turning round and strutting about until his song comes to a close, which it seldom does before he has imitated the peculiar song or call of every bird and beast that may come within reach of his most wonderful ear.

" His power of mimicry is quite astonishing. A pair of these birds once built their nest in a strawberry bed in our garden. The young ones were taken when fully fledged and I reared them. When I could distinguish the cock by his attempts to sing I gave the hen her liberty. The cock I kept caged, and when three years of age he had attained to such a proficiency that, while sitting in my room as he hung outside the window, I could imagine the Nilghiri Robin within a yard of the window, the Common House-sparrow actually on the window seat, the Black-headed Tit-mouse on one of the flowering plants close by, the Kite just flying over, the Hill Mynah on a large tree at a short distance, the Yellow Wag-tail just taking flight, and innumerable others, all close at hand, all the notes being sung in rapid succession, and amongst them occasionally would be the neighing of a horse introduced, so correctly imitated that some who heard it have doubted that it could be the bird till they had looked in vain for the animal.

" On the Nilghiris the Crown-crest generally builds, first in the months of March and April, and again in August and September. They always construct their nest on the ground and beneath a tuft of grass. They scratch a shallow round hole on the surface of the ground, and lining it very neatly with fine grass seldom lay more than two eggs, though I have occasionally found three in their nests. Their ground colour is a light yellowish-brown with a profusion of dark spots, particularly at the thickest end"

The eggs, many of which Miss Cockburn kindly sent me along with one of the parent birds (so that there can be no mistake as to the species), are, as might be expected, very Lark-like in their appearance. In shape they are moderately broad ovals, somewhat pointed at one end, and they have little or no gloss. The ground colour is a dull white, and they are profusely spotted and blotched with dull pale yellowish-brown and dingy inky purple; in some of the eggs the markings are comparatively small, and so thickly set as to leave but little of the ground colour visible, the markings assuming the character of a dense uniform mottling. In others the markings are larger and far less closely set, fully half the surface of the egg being free from marks.

In length they vary from 0·85 to 0·92, and in breadth from 0·63 to 0·68; but the average of eighteen specimens is 0·87 by 0·65.

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765 *bis.—Spizalauda simillima, Hume.*

The Northern Crown-crest Lark breeds in suitable localities, *viz.*, dry, open, more or less cultivated, lands, throughout the Central Provinces, the eastern portions of the Punjab, the North-Western Provinces, Oudh, and Behar, but is rare in the latter province.

The breeding season lasts from June to August, but the great majority of the numerous eggs I have from Lahore, Etawah, Jhansi, and Saugor were obtained on various dates in August.

They build on the ground in dry, open, thoroughly drained country, always placing the nest in more or less of a depression in the soil, and often concealing it entirely behind an overhanging clod, or at the roots of a thick bush, or within a dense clump of grass.

The nests of this species which I have seen have all been small, rather oblong, shallow cups, measuring externally about 3 inches to 4·5 in diameter and 1·5 to 2·25 in height, rather compactly and densely put together with coarse vegetable fibre and by no means fine grass. The egg cavity, which had no lining, measured from 2 to 3 inches in diameter, and was from an inch to 1¼ inch in depth.

From Jhansi and Saugor, where he obtained numerous nests, Mr. F. R. Blewitt writes: "The Northern Crown-crest Lark breeds from the middle of June to August. A grass patch is generally selected for the nest, sometimes a close growing bush, at the base of which the nest is made. The nest is always made on the ground, and, as far as possible, well secreted in the patch or bush *under* which it is sheltered. The nest at the base is made of coarse roots and grass to about an inch or 1½ inch in thickness. On the upper surface of this is placed grass of a finer texture, with occasionally khus intermixed. The centre of the nest is a hollow of from 1½ inch to an inch in depth. The grass of the nest is closely put together, forming on the whole a compact structure. The diameter averages about 5 inches.

"The eggs are white, with minute ashy-looking spots, sometimes of lightish brown, all over, thicker towards the broad end.

"The average length is about 0·8 and breadth 0·6. Three are the regular number of eggs, though two are frequently found."

In this latter remark I quite concur. Out of six nests found and taken by myself one contained three, and two, two eggs each, all fresh: one contained two hard-set eggs and two, two young ones. In my opinion three is the maximum number.

It is probable that these birds have a second brood in February or March, just as their southern ally has, but I have had no evidence of this.

The eggs of this species appear to me to be more variable than those of any other Lark, and they are also more glossy than those of the majority of the species of this family. The shape I take to be typically a rather short broad oval, a good deal pointed at times towards the smaller end. Eggs taken even out of the same nest vary greatly in size. Some eggs have a clear greenish-white ground, and are richly and thickly spotted and speckled, but most densely at the large end, with rich reddish and orange brown, intermingled with tiny faint inky purple clouds. In this type of egg the markings are clear and well defined, reminding one of some types of *Thamnobia cambaiensis.* The majority of the eggs, however, have a creamy yellow ground, and are thickly and *very* finely freckled and clouded all over with faint inky purple and yellowish-brown, the markings everywhere ill-defined and all but confluent. Other eggs have a greyish or yellowish white ground, and are streaked and spotted, or clouded and speckled, with greyish-, earthy-, or olive-, brown, as the case may be.

The eggs vary from 0·73 to 0·86 in length, and from 0·55 to 0·65 in breadth; but the average of thirty-nine eggs is 0·77 by 0·6.

I may note that, though he quoted Sykes's name, the dimensions he gives make it probable that Jerdon described a northern specimen.

766.—*Alauda arvensis, Lin.*

This, though certainly not *triborhyncha,* Hodgson, is the larger Sky-lark which Dr. Jerdon describes under this latter name, and which, if distinct from the European bird, should stand as *dulcivox,* Hodgson. Mr. Brooks considers that it is specifically distinct: I do not. I, therefore, call it *arvensis*: he retains Hodgson's name. It makes very little difference, as with this explanation everybody will understand which bird I refer to.

The Sky-lark (he would call it the "Larger Indian Sky-lark") breeds, *I believe,* pretty well all through the Himalayas, at elevations of from 8,000 to 10,000 feet, although I only *know* of its nests having been found in Kooloo and Cashmere.

In India as in England the oft-quoted lines subjoined well describe alike the nest and its situation :—

> "He loves, where tufts of grass
> Luxuriant crown the ridge; there, with his mate,
> He founds their lowly house of withered bents
> And coarsest spear-grass; next, the inner work
> With finer and still finer fibres lays,
> Rounding it curious with his speckled breast."

The only five nests of which I have records were found in May and June, and contained one five, two four, and the rest lesser numbers of eggs.

Eggs which I consider belong to this species, though Mr. Brooks would assign them to *dulcivox* as a distinct species, taken at Soonamerg in Cashmere by Captain Cock and in Kooloo by my own collectors, very much resemble those of *A. gulgula,* but are somewhat larger and have the markings, I think, rather coarser.

The ground colour of the egg is white, tinged greenish, yellowish, brownish, and greyish in different specimens, and the whole surface is thickly and moderately finely mottled over (much more densely towards the large end) with brown (the shade of which varies much in different eggs), generally more or less intermingled with dull grey. In some eggs the brown is decidedly yellowish; in others it is a sepia brown; in some it is decidedly greyish. In most eggs the markings seem more or less completely confluent towards the large end, and form there a more or less irregular clouded cap or zone.

The eggs vary in length from 0·83 to 0·93, and in breadth from 0·65 to 0·67; but I have unfortunately only measured four.

767.—*Alauda gulgula, Frankl.*

Under this one specific title I propose to include all the many races of the Indian Sky-lark. Both Mr. Brooks and myself have discussed these Sky-larks (STRAY FEATHERS, Vol. I, pp. 38 and 484), and I need say no more on the subject, as it will be understood that under Franklin's name I include *malabarica* (*Jerd et auct. nec Scop.*), *triborhyncha*, *leiopus*, and *orientalis* (Hodgs), *guttata*, and *australis* (Brooks), and there is the less inconvenience in this, that all these races, alike in hills and plains, north and south, breed at the same season (from the middle of April to nearly the end of June), build the same kind of nest, and lay the same number of precisely similar eggs. I have received these latter from the Nilghiris, Central Provinces, Saharunpoor, Almorah, and Cashmere, and no one can possibly distinguish the one from the other.

The nest is always placed on the ground in a shallow depression, usually, I believe, scratched by the birds themselves, under the shelter of some clod of earth, large stone, tuft of grass or other herbage, or dense stunted bush. It consists merely of a deeper or shallower cup or saucer of fine grass, in many cases a mere lining to the hole or depression, in others a regular nest, the interior always being composed of the finest grass. Five is certainly the maximum number of eggs laid, and three is, I think, the usual complement.

From Almorah Mr. Brooks tells us that he found the Indian Sky-lark (he had other views in those days, so I am in doubt which particular race he refers to) laying in Kumaon in May, and he says that the bird is "common on open ground near Almorah, and between that place and Binsur. It is a most delightful songster, quite equal to the English Sky-lark, I think, and the song is sweeter. I do not think it goes on for quite so long a time as *A. arvensis*.

"The nest is placed in any little hollow more or less overgrown with short grass, and one I found with a stone partly overhanging it. It is composed, just like that of the English Sky-lark, of a small quantity of fine grass. Number of eggs three or four, greyish-white, mottled and speckled all over with two shades of light brown. The colouring closely resembles that of the eggs of *A. arvensis*."

From Saharunpoor Captain G. F. L. Marshall writes: "Our Sky-lark builds a deep cup-shaped nest on the ground, against some clod of earth, composed of grass. It lays in the latter half of May, and five is the full number of the eggs."

Miss Cockburn says: In the Nilghiris the Indian Sky-larks breed up to the summits of the highest mountains, as well as on their slopes, and in the valleys.

"They build twice in a year, sometimes beginning as early as February, and continuing till May. Then again from August to October, and even later as I have noted, having found a young Lark on the 2nd November 1858.

"They choose the open country, with sometimes a small low bush here and there. The nest is placed on the ground slightly concealed from view by a low bush, or small tuft of grass. I always fancy the birds scratch the round holes for themselves, as I have noticed a bare, smooth, round hole from which a pair of Larks had flown away, and some days after as neat a Lark's nest as possible occupied the same spot. The material they use is entirely fine grass, twisted round and round the hole, nearly half an inch thick. This fine grass is also placed, a little over the edge, on the side at which they enter. I never measured a nest, but think they were about 2½ inches in diameter and 2 inches in depth.

"I do not remember *ever* having found a nest with more than three eggs or young ones but have seen many with only two (occasionally) fully incubated eggs.

"Sky-larks never lay twice in the same nest, but always build a new one for every brood. I think an egg is laid every two days.

"Both parents share the pleasure of building, hatching, and feeding the young. Even long after the latter leave the nest, they are fed and watched by their parents, and return at evening, for a week or so, to sleep in the nest."

From Conoor (Nilghiris) Mr. Wait tells me that "the Sky-lark lays in June. The nest is small and cup-shaped, composed of grass and fibres, and placed at the roots of small bushes or tufts of grass. They lay five eggs."

"For its nest in Ceylon," says Mr. Layard, "it selects some depression in the soil, which it lines with fine grass, and in it deposits from three to five eggs of a brownish-grey colour profusely streaked and mottled. It breeds in April."

Dr. Jerdon states that "it breeds from March to June, making its nest of grass and hairs on the ground under a tuft of grass, laying three or four greenish-grey eggs, with numerous brown and dusky streaks and spots."

I have never seen eggs before the latter half of April, except from the Nilghiris, nor hair in the lining of any nest of this species. Both season and lining indicate *Galerida cristata.*

All the eggs that I have of this species from Northern India vary from moderately elongated to moderately broad ovals, at times a good deal pointed towards the small end, and fairly glossy. The ground colour in some is greyish-, in others yellowish-, white, and all are densely speckled, spotted, freckled, and even blotched with pale yellowish and purplish brown or very pale inky purple. They are as a whole more feebly coloured than the eggs of any of the Bush or Crown-crest Larks.

Eggs of this species sent me from the Nilghiris by Miss Cockburn and others exactly resemble those of the northern races. They are moderately elongated, very perfect, ovals, and belong mostly to two types of colouring—the one has a cream-coloured ground, and is speckled and freckled excessively finely all over with tiny specks and spots of dull, pale, purplish-grey and very pale brownish-yellow; in the other type the ground is nearly pure white, and the markings, though similar in colour to those of the other type, are darker in shade, larger, and much less densely set.

Eggs of these types present very different appearances according as the markings are coarser and finer, and as the purplish-grey or brownish-yellow predominates. One specimen, which appears abnormally coloured, has a dull white ground, speckled and clouded almost exclusively towards the large end with pale slatey grey. Most of the eggs are more or less glossy; some have a very fair amount of gloss.

In length the eggs vary from 0·74 to 0·88, and in breadth from 0·56 to 0·66; but the average is 0·8 by 0·61.

769.—*Galerida cristata, Lin.*

The great majority of those vast multitudes of Crested Larks that during the cold season meet us on every bare plain and every stubble-field, throughout the drier and better cultivated portions of Continental India at any rate, are, I am convinced, migratory. A certain number, however, unquestionably remain to breed. I have taken the eggs at Etawah, Bareilly, and Ferozepoor, I have had them sent from Saharunpoor and Lahore, and I know of the birds breeding in the Salt Range and about the Sambhur Lake.

The breeding season lasts from March to June. They build on the ground like other Larks, and in very similar situations, that is to say, in hollows or depressions under the cover of some bush, tuft of grass, clod of earth, or overhanging stone. The nest varies from a shallow pad 4 or 5 inches in diameter, with a slight central depression as an egg cavity, to a neatish and regular cup, with a fully hemispherical cavity. Exteriorly the nest is always composed of more or less fine grass, just like those of all the preceding species, but unlike theirs the nests have generally a more or less regular lining of very fine grass, cotton, wool, soft vegetable fibres, hair, and even a few feathers. I think that, *as a rule*, the nests of this species may be distinguished at a glance by the lining from those of all our other Larks with which their eggs could be confounded. Three is the largest number of eggs that I have found as yet in any nest, but others report five.

Captain G. F. L. Marshall sent me the following note on the nidification of this species; at the time we considered his nests to belong to the supposed *G. Boysii*, Blyth, a couple of the parent birds that he had preserved having very short wings; but I have since shown (STRAY FEATHERS, Vol. I, p. 214) that neither this species of Blyth's nor Franklin's *chendoola* can be accepted as a distinct species.

Captain Marshall says: "The Crested Lark, to judge from the two or three nests I have seen, breeds in March in the Saharunpoor District, the young being hatched early in April.

"The nest is placed on the ground in a slight hollow beside a tuft of grass or a small *Bēr* bush. I found one nest in the middle of a village cart track near a low bush between the wheel tracks. The nest is cup-shaped, formed by lining a hollow in the earth with grass, roots, fibre, and little bits of straw, dry wheat leaves, and stringy bark, neatly put together, so that the sides are level with the ground. There is no perceptible lining. The size of the egg receptacle is about 2½ inches in diameter and 2 inches deep, but the material did not hold together sufficiently well to retain the shape after it had been taken out of the ground.

"The eggs, three in number, were slightly glossy, of a white ground, profusely speckled, spotted, and blotched with various shades of yellowish and pale purplish brown. In one the specklings were so close all over the egg as almost to conceal the ground colour, and in all the markings are much thickest at the large end, where they have a tendency to form a nearly confluent cap."

From Sambhur Mr. R. M. Adam writes: "The Crested Lark is very common. It breeds about April and May. On the 29th April I saw a nest all but finished in a wheat field. In young birds the head and wing coverts are spotted with dusky white."

Mr. W. Theobald makes the following note on the nidification of this bird in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lay from the fourth week of March to the 3rd May; eggs four; shape ovato pyriform, measuring from ·82 to ·88 in length and from ·64 to ·66 in breadth; colour yellowish-white, uniformly freckled with greyish-yellow and neutral; nest a little grass in a hole in the ground."

The eggs are broad ovals, typically a good deal pointed towards the small end, and they have a little but not much gloss. Our Indian eggs, I must remark, are very much smaller than those of European birds to judge from Mr. Hewitson's figure. I have taken a good many eggs of this species, and they averaged little, if anything, bigger than Mr. Hewitson's figure of the egg of *C. brachydactyla.* They have a strong family resemblance to the various Lark eggs already described, but they are of course larger than all of them, except those of *A. arvensis* and *S. malabarica,* which are much the same size. The markings too as a whole are larger and more conspicuous. The ground colour as usual is a greenish or yellowish white, and the markings, specks, spots, and blotches are yellowish or greenish brown and pale purple, all three colours of markings being often met with in the same egg. Here and there an egg is found with a pretty conspicuous zone of more or less confluent markings.

In length they vary from 0·85 to 0·92, and in breadth from 0·65 to 0·69; but the average of seventeen eggs is 0·87 by 0·65.

772.—*Crocopus phœnicopterus, Lath.*

The Bengal Green Pigeon, though found as a straggler in the eastern portions of the Punjab and Rajpootana, and somewhat more commonly almost throughout the Central and North-Western Provinces and Oudh, is really *at home* only in Bengal and the tongue of Bengal-like country that runs up under the Himalayas westward to the Jumna; everywhere else the so-called southern species, *C. chlorigaster*, is much more abundant.

Following, I suppose, Dr. Jerdon, Mr. Wallace in his article on the Pigeons of the Malay Archipelago gives *C. phœnicopterus* from Northern India and China and *C. chlorigaster* from Ceylon and the Indian Peninsula. As a matter of fact, *chlorigaster* is fully as common in Upper India, and in most places far more common than *phœnicopterus*. In the North-West Provinces both species associate in the same flock, *chlorigaster* being, as far as my experience goes, most numerous. Out of sixty odd shot in three days in the Etawah District in March 1866 only nine belonged to the so-called Northern Indian type, and seven shot near Hansi (Punjab) in December 1867 were all *chlorigaster*. Eastwards of Bengal the present species shades into the nearly-allied *viridifrons*, and throughout Upper India innumerable forms, more or less intermediate between it and *chlorigaster*, are to be met with. I have seen specimens of *phœnicopterus* from the Malabar Coast, and though I have not yet thoroughly examined the question, I suspect that different as are typical examples of the two races, they as little deserve specific separation as *Ægithina tiphia* and *zeylonica*.

The present race or species breeds from March to June.

I have only myself found two of its nests, both in the Etawah District (where I have taken at least a dozen of *chlorigaster's*), both placed near the outside of large Mango trees, at heights of from twenty to thirty feet from the ground, and in the vicinity of water.

The nests were slight twig structures, laid upon two or three thin branchlets, forming a horizontal fork, devoid of lining, and perhaps 6 inches in diameter and 1 inch in thickness, with a shallow central depression barely ½ inch in depth. Two is, I believe, the full complement of the eggs. This species is very common in the Dhoon and in the Kumaon Terai, but it remains there all the year through and does not ascend the hills.

From Seetapore Captain Cock remarks: "Makes a rough stick nest, rather high up, usually in a Mango tree. The nest is of the usual type, but frequently placed on an excrescence, or where some parasitic plant shoots out and thickens the foliage, so as to render the bird more difficult to be seen. Lays two white eggs of the usual type in May."

Captain G. F. L. Marshall writes: "I have found *C. phœnicopterus* breeding in the Mozuffernugger District in the winter (?); but in Saharunpoor it breeds in May and June, building on trees a small rude nest of twigs laid crosswise about twenty feet from the ground. It lays two white eggs of a rather broad oval shape. I found a nest with one fresh egg on the 16th May, and another with two fresh eggs on the 12th June. The old bird sat very close on both occasions, not stirring from the nest till I was close up to her, and then only moving out of reach and not leaving the tree. One nest was in a Shishum and the other in a Mulberry tree, both on the canal bank."

The eggs are of the usual Pigeon type, white and glossy, as a rule broad, nearly perfect, ovals, but occasionally in this and other species of Green Pigeons a good deal pointed at one end.

In length they vary from 1·16 to 1·35, and in breadth from 0·9 to 1·0; but the average of eighteen eggs is 1·23 by 0·95.

773.—*Crocopus chlorigaster, Blyth.*

The Southern Green Pigeon breeds, I believe, throughout India, except in Lower Bengal, Sindh, and the western portions of Rajpootana and the Punjab. Throughout Continental India (I have no notes of the breeding season in the Peninsula) it lays from March to June, making a typical Dove nest on trees and laying the inevitable two white eggs. It has certainly two broods, perhaps more.

I have taken its nest in Etawah, Bareilly, Oonao (Oudh), Futtehgurh, and Meerut, and have had its eggs sent me from Hansie, Sealkote, and Mundlah (Central Provinces).

I have failed to notice anything worthy of record about its nidification. I have a score of notes like the following, one of which will suffice as a sample:—

"*Etawah, March* 23*rd*, 1867.—Two eggs. The nest was a loose structure of twigs, much like a common Pigeon's or a Dove's at the fork, formed by six branches of a Mango tree. The bird sat so close that it would not move for stones, &c., and only flew when a man climbing got close to the nest; and yet the eggs were nearly fresh."

Mr. W. Blewitt found a number of this bird's nests in the months of April and May in the neighbourhood of Hansie. As he secured and forwarded to me the parent birds, there can be no doubt as to the species. He says: "The nests were placed on Toon, Neem, Shishum, and Keeker trees, mostly growing on the canal bank, at heights of from fourteen to eighteen feet from the ground.

"They were composed of Shishum, *Zisyphus*, and Keeker twigs, in some cases slenderly, and in others somewhat densely, put together.

"One or two were absolutely without lining, but they were mostly very scantily lined with leaves, feathers, or fine straw. They varied from 5 to 7 inches in diameter and from 1½ to 3 inches in depth. They contained two eggs in every case, and some taken at the end of May were quite fresh." I have never found any lining that I can remember.

Captain G. F. L. Marshall writes: "I have taken the eggs of both these Green Pigeons in the Bolundshuhar District on the 8th and 16th May; both nests were in Shushum trees. I have also taken eggs of the present species on the 12th June. The nest is a few sticks placed about ten or twelve feet from the ground; the bird sits exceedingly close, even when the eggs are fresh. The eggs are pure white and, as usual, two in number. I have pelted a bird with clods of earth for some time without getting it off the nest."

Mr. R. M. Adam says: "I found a nest of this species, containing one egg, in North Behar on the 27th March.

"In Agra I had the eggs of this species (with the bird) brought to me on the 2nd June, and about the middle of June I found a nest, near Muttra, which contained two eggs. This nest was situated on a Mango tree in a small Mango tope. It was a loosely-made stick structure placed on a fork."

The eggs do not differ, I think, perceptibly from those of the preceding species; as in the whole of this family they are pure white and more or less highly glossed,—are typically a moderately broad and very perfect oval, but are not unfrequently a good deal pointed towards one end. Like most of the Pigeons and Doves, they vary a good deal in size, *viz.*, in length from 1·12 to 1·35, and in breadth from 0·9 to 1·0. The average of twenty-six eggs is 1·25 by 0·95.

774.—*Osmotreron bicincta, Jerd.*

Some twenty years ago Mr. Blyth recorded the following note about the Indian Orange-breasted Green Pigeon and its nidification :—

"This beautiful species is common to all India, but would seem to be more numerous in Lower Bengal than in the Peninsula; and it occurs plentifully in Nepal, Assam, Sylhet, Tipperah, Arracan, and the Tenasserim Provinces. In Bengal, however, it is much less numerous than *T. phœnicoptera*, and the flocks of the two species do not commingle. I once found its nest, half-way up a small Mahogany tree, in the Calcutta Botanical Gardens. The eggs, of somewhat less lengthened form than in Pigeons, generally measured 1¼ inch in the long diameter. I have also obtained the young, which resemble in coloring the adult female."

Following Blyth, but perhaps scarcely understanding what the latter really meant, Dr. Jerdon tells us that this species is spread throughout the greater part of India, &c.; but, as a matter of fact, it is entirely unknown in Kandeish, Goojerat, Kattywar, Sindh, the Punjab, Rajpootana, and the North-West Provinces, and is only known in the sub-Himalayan terais of Behar and Oudh and the eastern forest regions of the Central Provinces. It is a purely Indo-Burmese type, not to be found, I think, in India out of the 60-inches' rainfall regions, and, excluding Assam, Cachar, &c., is not, I believe, to be found over more than one-third of India Proper.

According to Mr. Hodgson, this species breeds from April to June in the terai and the low valleys at the base of the Nepal Hills. They make a loose stick nest on branches of trees, at no great elevation from the ground, and lay two pure-white eggs, the usual Pigeon-shape, one of which is figured as measuring 1·15 by 0·8.

I know little of its nidification. Mr. Irwin took a nest in Hill Tipperah in April, containing two eggs, which he kindly sent me. He described the nest as a very slight structure, of thin twigs loosely put together and laid towards the end of a branch of a small tree.

The eggs, to judge from those sent, are very perfect ovals, pure-white, moderately glossy, and about the size of those of *Turtur cambayensis.* The only eggs that I as yet possess of this species are those taken by Mr. Irwin.

These measure 1·1 by 0·9 and 1·02 by 0·85. I must say that I doubt the eggs of this small bird ever being 1·25 in length; but eggs were not measured accurately with calipers in 1845, when Blyth wrote.

775.—*Osmotreron malabarica, Jerd.*

The Grey-fronted, or Malabar Green Pigeon is peculiar to the wooded and more or less hilly tracts of the Indian Peninsula. It appears to breed from February to April, making the usual slight stick nest upon trees and laying two eggs.

I have never taken the eggs myself. Mr. J. Darling (Jr.) writes to me that he "took several nests of this species on the 10th April, at an elevation of about 3,000 feet, at the foot of the Terriat Hills, ten miles north-west of Vythery, South Wynaad. The nests were placed in 'Nelly-kai' (the so-called gooseberry) trees, at heights of from fourteen to sixteen feet from the ground, in forks, and one of them in a bamboo, all situated in scrubby jungle with only a few scattered trees. There were numbers of old nests apparently of this same species all close together. The nest was a slight, ragged, shapeless thing, composed of thin, dry twigs, laid together in a very disreputable fashion, with a circular central depression lined with a few grass stalks. The nests were 5 or 6 inches in diameter; the depression hardly more than ¼ inch in depth. The eggs, two in number, were all a good deal incubated. They are pure white, and measured about 1·12 by 0·87. On one nest I shot the female, on another the male with its beautiful maroon mantle."

One egg sent me by Mr. Darling measured 1·08 by 0·84.

Mr. F. W. Bourdillon kindly favored me with an egg of the Malabar Green Pigeon, which he procured in the Assamboo Hills (*vide ante, p.* 493) on the 24th February. The egg was a little set, and was placed on a very slight nest of twigs some 6 inches in diameter. The nest was built upon a bough, at a height of some forty feet from the ground.

For the size of the bird the egg seems small; it only measures 1·02 by 0·87; it is therefore a very broad oval, but it is very slightly pointed towards one end. The shell is fine and compact, but thickly studded with minute pores, and has but little gloss. It is of course pure white.

777 *bis.—Osmotreron chloroptera, Blyth.*

The Andaman Green Pigeon probably breeds in May and June. Early in May, Davison saw one carrying a twig to the top of a tall slender tree standing on the outskirts of the forest near Port Blair, where it was apparently building its nest.

778.—*Sphenocercus sphenurus, Vig.*

The Kokla breeds throughout the outer ranges of the Himalayas south of the first Snowy Range, at elevations of from 4,000 to 7,000 feet. To the Himalayas west of the Ganges they are merely summer visitants, and this may also be the case in Kumaon, Nepal, and Sikhim, though I have not as yet positively verified the fact. West of the Ganges they arrive early in April, and by November have all disappeared, not to the low valleys of these same hills, not to the plains that lie below them, but elsewhere.

Long ago Captain Hutton wrote to me: "What becomes of the Kokla which, arriving in early summer, retires again in small parties as the autumn sets in? Where do they then go to? Within the mountains of the North-West not one remains, neither are they to be found in winter in the warmer region of the Dehra Dhoon, although the *Hurrial* (*Treron phœnicoptera*) still remains there. Leaving us, as it does, as soon as the summer heats decrease, it evidently seeks a warmer climate, where the fruits and berries upon which it feeds are procurable, till spring returns, and it seems therefore by no means improbable that they may select the Eastern Isles. But have they ever yet been found there? Blyth in his CATALOGUE OF BIRDS merely assigns the *Himalaya* as their habitat, which is obviously incorrect, as it is merely a summer visitor to the hills, and we consequently still require to know where it resides at other seasons."

In LAHORE TO YARKAND (p. 119) I drew attention to the remarkable fact that "vast multitudes of a large and conspicuous species, tenanting during the summer a zone of hills varying from twenty to one hundred miles in width, and stretching at any rate from the borders of Afghanistan to the banks of the Ganges at Hurdwar, absolutely desert us during the winter, and no one has yet explained what becomes of them." We knew that they neither went north, south, nor west, and hence I concluded that they must go eastwards, and recent enquiries that I have made, and collections that I have examined, lead me to the conclusion that a great proportion of these Koklas migrate to Assam, Cachar, Tipperah, Burmah, and even the northern portions of Tenasserim, in all hilly and forest-clad *localities*, in which they appear to be common during the winter, and either rare or wanting during the summer.

In the Himalayas they breed from April to July (most commonly at an elevation of 5,000 feet), making a slight platform nest, composed of coarse grass and small dry twigs, loosely laid on some forked branch, at any height from six to fifty feet above the ground.

They lay two eggs. Whether they breed during the cold-season when absent from the hills, I cannot say. In the Himalayas, so far as I have yet been able to ascertain, they have only one brood.

Captain C. H. T. Marshall writes: "The Kokla breeds in Spruce Firs about Murree. The nest is usually about twenty feet up, built by the trunk of the tree. It lays in June."

Captain Hutton says: "This species, which is the Kokla of the natives, arrives in the neighbourhood of Mussoorie in the beginning of April, and remains during the summer to breed.

"The nest is composed of dry twigs, and the eggs, two in number, are usually pure white and more gracefully ovate than those of *Turtur risorius*, and measure about 1·12 by 0·82. The breeding season lasts from the end of April until the latter end of June, and the nest is a slight platform usually placed on high forest trees. In October they collect into small flocks of six or eight and quit the neighbourhood of Mussoorie."

From Kumaon Mr. R. Thompson remarks: "Their nests are composed of small dry twigs loosely laid in the forked branches of a tree, not unusually at no great height from the ground. They lay two pure white eggs. They breed from April to June, and are most plentiful at heights varying from 4,000 to 5,000 feet. The fruit of the *Myrica sapinda*, or Kaiphal, which ripens about their breeding time, affords food for vast numbers of these birds."

Mr. Hodgson tells us that this species breeds in the central region of Nepal from April to July, laying two pure-white eggs, one of which he figures as measuring 1·12 by 0·85.

The eggs that I possess of this species, taken in the neighbourhood of Simla, Gurhwal, and Mussoorie, strongly resemble those of the two species of *Crocopus* already described, but they are, if anything, somewhat narrower and more elongated ovals. They have also perhaps a trifle less gloss. They are of course pure spotless white. In length they vary from 1·08 to 1·26, and in breadth from 0·8 to 0·95.

780.—*Carpophaga ænea, Lin.*

Captain Wimberley sent me two eggs of this Imperial Green Pigeon procured in the Andamans, near Mount Harriet, in July. Unfortunately no particulars as to nest, &c., were recorded, and it is not known whether both came out of the same nest or whether each was from a separate nest. The eggs are of the usual Pigeon type,—broad ovals, very obtuse at both ends, unspotted white, with a slight gloss, and with very fine compact shells. They measure 1·6 by 1·25, both being of precisely the same shape and size.

It will, of course, be understood that in adopting the Linnean name I accept, pending a personal investigation of the question, Lord Walden's view of the specific identity of Indian, Burmese, Cingalese, Javan, Bornean, and Philippine races, (*vide* STRAY FEATHERS, Vol. II., p. 260).

780 *ter.*—*Carpophaga insularis, Blyth.*

I have shown elsewhere, (STRAY FEATHERS, Vol. II., p. 262,) good grounds, as I think, for considering the Nicobar Imperial Pigeon distinct.

Of its nidification we have but few records.

Mr. Davison remarks of this species that "they breed in February and March. On the 17th February I found a nest on the Island of Trinkut. It was built in a Cocoanut Palm, and was about twenty feet from the ground. As usual with Pigeons and Doves, it was simply a platform of dry twigs very loosely put together, and was built on a dried-up fruit branch, which is itself merely a mass of dry twigs. It contained one large white egg. It is my belief that the normal number of eggs laid by this Pigeon is only one. This certainly is the case with *Calænas nicobarica*, for I must have examined at least a couple of dozen nests, and in no single case was there more than one egg or one young one; and I have found that one egg was the usual number laid by *Palumbus Elphinstonii*, and I was informed by several convicts that they usually obtain only one young-one from the nests of the present species and those of *C. bicolor*."

The egg which Mr. Davison obtained is pure white, a very regular, moderately broad, oval; the shell, smooth and satiny, but with very little gloss. It measures 1·9 by 1·39.

781.—*Carpophaga insignis, Hodgs.*

According to Mr. Hodgson, this species breeds in the central region of Nepal, building a large straggling nest of thin sticks placed on some horizontal fork, and laying from May to July a single pure-white egg, one of which is figured as measuring 1·75 by 1·27.

781 *quat.*—*Carpophaga bicolor, Scop.*

Captain Wimberley, to whom I owe the single egg of the Pied Fruit Pigeon that I possess, remarks: "I obtained this egg on Trinkut Island (Nicobars) during the first week of February. The nest was built of sticks and twigs, and was very similar to that of our English Wood Pigeon. There was only one egg in the nest, and it was much addled. The nest was placed in a low Mangrove tree overhanging the river, and the old bird flew off the nest as I drew near to it; but I failed to shoot it."

The egg is of a longish oval shape, a good deal pointed towards the small end, pure white, and tolerably glossy. It measures 1·78 by 1·25.

Mr. Davison remarks: "Although I did not obtain the nest or eggs of this bird myself at the Nicobars, from all I could ascertain from the convicts, &c., these birds breed in January, February, and March, building their nests, which, like those of other Pigeons, are merely a platform of sticks, by preference in the Mangroves, and laying usually only one white egg. I observed it on the Great Cocos, but did not meet with it at the Andamans."

783.—*Dendrotreron Hodgsonii, Vig.*

I know nothing as yet certainly of the nidification of this species, the Speckled Wood Pigeon, but should certainly have expected it to nest on trees. Captain Irby, however, remarks, in the IBIS for 1861, that this species is "frequently seen in Kumaon in April and May: at that time *some nested in inaccessible cliffs* near Moonsheyaree, about seventy miles from Almorah."

This may be correct, but requires confirmation. Captain Cock tells me that this species "breeds in Cashmere. In June I shot the birds, which were evidently breeding in the Sonamerg Valley. I was not, however, fortunate enough to take their eggs, which we may, however, safely conclude to be of the usual type."

784.—*Palumbus casiotis, Bonap.*

The Himalayan Cushat breeds, so far as I have yet ascertained, only in the extreme North-West Himalaya, and perhaps also in the higher fir forests immediately below the snow in the Western Himalayas generally.

I have never found a nest. About Simla, Mussoorie, and Almorah, they first appear about the beginning of November, and remain with us throughout the winter and until perhaps the middle of April; but they then disappear. Captain Hutton and Mr. F. Wilson quite confirm my experience. The former writes: "It is a curious fact that, although in the depth of winter the Himalayan Cushat (*Palumbus casiotis*) is abundant both at and around Mussoorie, they are not in summer, when they leave us, to be found in the forests of our central region, although procurable in the higher tracts between the Jumna and the Sutlej. Of this I have been assured by Mr. F. Wilson, who informs me that, although he has at all seasons of the year explored the central forests between the Ganges and the Jumna, he does not remember to have seen this Pigeon in summer; it would, therefore, appear to wing its way, as the spring sets in, across the Jumna to the higher forests of the North-West, and this I believe to be the case with many species, which, appearing to shun the tracts between the Jumna and the Ganges, are yet to be found in Sirmoor on the one hand and in Kumaon on the other to the east and west of us, but why this should be, unless influenced by the nature of the forests, remains to be discovered. In short, whatever may be the reason, it clearly proves that there are yet many things in the natural history of both heaven and earth that are still unknown to our philosophy."

Further west they are plentiful in summer and at low elevations. On the 20th May Captain Unwin took a nest containing two nearly fresh eggs (which he very kindly sent to me) in the Agrore Valley, at an elevation of perhaps 2,500 feet. The nest was a large loosely-built twig platform, built on a branch of a Fir tree near the trunk about thirty feet up the tree.

From Murree Captain C. H. T. Marshall records that "two nests of this species were taken about the middle of June. They breed in the Valley of the Jhelum, at a low elevation, in dense thorny jungles. The egg resembles that of the English Wood Pigeon; size, 1·65 by 1·15."

Captain Cock says: "Captain Marshall and myself found this bird breeding near Murree in June. It makes the usual type of nest placed on bushes or small trees, never, according to our experience, at any great height from the ground. I should say that twelve feet was the usual height. The eggs are white and very large."

The few eggs of this species that I possess are very similar to, but as a rule slightly smaller than, those of the European Wood Pigeon, (*P. palumbus*). The eggs are scarcely larger than those of *C. intermedia*, but they are longer and narrower, much more elongated ovals in fact than those of this latter species. The eggs are of course pure white, with only in some specimens the faintest possible creamy tinge, and they have a fine gloss. The shells are not very fine, but exhibit over the whole surface an infinite number of minute pores, similar to, but far less conspicuous than, those of the eggs of so many of the game birds.

In length they vary from 1·5 to 1·7, and in breadth from 1·05 to 1·17.

786.—*Palumbus Elphinstonii, Sykes.*

The Nilghiri Wood Pigeon breeds in many of the better-wooded localities of the Blue Mountains, at elevations of 5,000 feet and upwards. They build the usual stick nest,—a very slight platform, placed on some stout bough of a large tree in the midst of dense forest.

The breeding season appears to extend from March to July, and they lay a single egg only.

Writing from Kotagherry, Miss Cockburn says: "The nest of the Nilghiri Wood Pigeon resembles that of all Pigeons and Doves in the careless manner in which a few sticks are put together. On high trees in dense woods this bird prepares the abode for her young, and chooses a projecting bough, as if she had some thought for the safety of the egg she lays (I say *egg*, for I have seen four nests of the Nilghiri Wood Pigeon; two had *one egg* in each, and the other two contained *one* young-one in each). I have also remarked that only *one* Pigeon is noticed near the nests, which are to be found in the month of April.

Subsequently Miss Cockburn herself sent me, and Mr. Davison brought me, eggs taken in June. The latter gentleman remarks:—

"This Wood Pigeon breeds on the Nilghiris and its slopes, breeding rather late in the year. The nest, which is merely a platform of dried twigs, is usually placed in some thick thorny bush or mass of cane from about twelve to twenty feet from the ground. I believe that this Pigeon, like the other large fruit Pigeons, only lays one egg; occasionally it *may* lay two, but if so this must be, I think, quite exceptional."

The eggs are very perfect ovals, usually broad, sometimes slightly elongated. They are of course pure-white, spotless, and glossy, and absolutely undistinguishable from very large eggs of *C. intermedia,* though of course considerably larger than the average of these.

The specimens I possess vary from 1·46 to 1·56 in length, and from 1·07 to 1·2 in breadth.

786 *bis.—Palumbus Torringtoni, Kelaart.*

"The habits of this Pigeon," writes Dr. Kelaart, "are strictly arboreal; it flies high and swiftly. It comes to Newera Elia to breed, and I have seen a nest with only one egg as large as that of the domestic Pigeon. The stomach contained fruits of the *Nelon.*" (?)

788.—*Columba intermedia, Strickl.*

It seems very doubtful to me whether, as time goes on, the Indian Blue Rock Pigeon will be accepted as specifically distinct from the European *livia.* Between the two, *turricola* and *Schimperi,* Bonap., and *spelæa,* Hutton, perfectly bridge over every difference, and even within our limits typical specimens of each of the five supposed species may be obtained.

Our Indian birds breed freely, as far as I have been able to ascertain, throughout India Proper, alike in hills and plains, though many of the Himalayan and Suliman Range birds are intermediate between *intermedia* and *livia,* and a few may be considered typical specimens of the latter. Into Assam, Cachar, and Burmah I am not aware that it extends, but these localities have been as yet too little worked to enable me to speak with certainty to the fact.

The breeding season in Upper India lasts from Christmas to May Day. The nest is chiefly composed of thin sticks and twigs, but are often more or less lined with leaves of the tamarisk, feathers, &c. As to situation I can quite endorse Dr. Jerdon's account. He says: "They are most partial to large buildings, such as churches, pagodas, mosques, tombs, and the like, frequently entering verandahs of inhabited houses and building in the cornices. Holes in walls of cities or towns too are favorite places, and in some parts of the country they prefer holes in wells, especially, I think, in the west of India, the Deccan, &c. In default of such spots they will breed in crevices and cavities of rocks, caverns, and sea-side cliffs; and I have often noticed that they are particularily partial to rocky cliffs by waterfalls. The celebrated falls of Gairsoppa are tenanted by thousands of Blue Pigeons, which here associate with the large Alpine Swift."

Where not disturbed, they breed in incredible multitudes. At the grand old fort of Deig in Bhurtpoor, where, as in most parts of Rajpootana, they are sacred, and even an European who molested them would risk his life, several *hundred thousand* pairs must live and breed. A gun fired in the moat towards evening raises a dense cloud, obscuring utterly the waning day and deafening one with the mighty rushing sound of countless strong and rapidly-plied pinions. Here for the first time I realized what the flights of *Ectopistes migratorius* in North America might be like.

From one single old kutcha well in the south of the Meerut District I netted one night over two hundred, and a good many others made good their escape.

Captain G. F. L. Marshall says: "I have often found the nests on edges of buildings. I have taken eggs in the Doab in April, May and June, earliest in Saharunpoor, latest further south and east."

The eggs, to the best of my belief, are precisely similar to those of *C. livia*, and like them vary a great deal in size and a good deal in shape, from broad very perfect ovals, only slightly compressed at one end, to moderately elongated and occasionally rather pointed forms. They are very glossy, and of course pure white.

In length they vary from 1·2 to 1·65, and in breadth from 1·02 to 1·25; but the average of some sixty eggs measured was 1·45 by 1·12.

791.—*Macropygia tusalia, Hodgs.*

Hodgson's Cuckoo Dove breeds in well-wooded hills and forests, at elevations of from 3,000 to 6,000 feet in the Himalayas eastwards of the Ganges, extending along the various ranges eastwards and southwards to Hainan in China and the northern parts of Tenasserim, south of which another species hitherto identified with *ruficeps*, Tem., but which appears to me separable and which I have called *assimilis*, makes its appearance.

According to Mr. Hodgson's notes this species lays in May and June in the central forests of Nepal. They build a large loose platform nest of sticks on some horizontal branch, at no great height from the ground. A nest taken on the 20th May, which contained two fresh eggs, was a foot in diameter and 3 inches in thickness. The eggs are white, with at times a very decided creamy tinge, and one is figured as measuring 1·5 by 1·1.

Mr. W. Theobald makes the following remarks on the nidification of this bird in the neighbourhood of Darjeeling:—

"Lays in the second week of July; eggs, oval; size, 1·40 by 0·98; color, dirty white; nest, a few sticks."

Dr. Jerdon says: "I found its nest on the Khasia Hills, at about 4,500 feet, on trees, at a moderate elevation."

792.—*Turtur pulchrata, Hodgs.*

I retain for our Indian Turtle Dove Hodgson's name. Our bird does not cross the Snows to go northwards, and I doubt very much whether, even if

Pallas's name *rupicola* applies to a Dove of this type at all, (see LAHORE TO YARKAND, p. 123), the Northern Asiatic bird is identical with ours and not with *gelastis*, Tem. *Gelastis* may be distinguished at once from the Indian bird by its pale ashy, instead of white, under-tail coverts.

Our Indian bird breeds throughout the lower ranges of the Himalayas, from Afghanistan to Sikhim at any rate, at elevations of from 4,000 to 8,000 feet. It is for the most part only a summer visitant to these hills. A few pairs linger during the winter in the lower valleys, but the great majority migrate at this season to the Central Provinces and Central India, where it may at times in the cold-weather be found associated with the next species.

T. pulchrata lays throughout the summer. I have found eggs early in May and late in August, but the great majority lay in June. It makes a loose, but rather more substantial, twig nest than many of its congeners, placed on some horizontal branch of a large tree, usually not far from the extremity.

Captain C. H. T. Marshall, writing from Murree, says: "This species breeds in June in the Pine Forests," but I have found their nests in all kinds of trees. The eggs are invariably two in number. I conclude, from the very different dates on which I have found the eggs, that they have two broods, but I am not certain of the fact."

Captain Hutton, (who, however, miscalled the bird *meena*) says: "This also is a mere summer visitor at Mussoorie, where it arrives early in April, when every wood resounds with its deep-toned cooing. It is not found lower than 6,000 feet there, and departs in October. At Mussoorie it breeds in May, making a platform nest on tall forest trees. The eggs are two and pure-white."

Captain Cock notes that the Indian Turtle Dove "breeds near Murree and in Cashmere on trees and bushes, at no great height from the ground, in May and June, laying two eggs of the usual Dove type, in the usual slight stick nest of the family."

The eggs of this species are like those of all its numerous allies,—regular ovals, pure-white, and very glossy. In size they exceed those of *T. risoria*, and are slightly smaller and decidedly less pointed than those of *Crocopus phœnicopterus* and *chlorigaster*.

In length they vary from 1·1 to 1·34, and in breadth from 0·85 to 1·0; but the average of twenty-one eggs is 1·22 by 0·93.

793.—*Turtur meena, Sykes.*

Sykes's Turtle-Dove is, as far as I have been able to ascertain, a permanent resident of the hilly portions of Southern India, of the broken belts of hills and forests that stretch across the Continent of India from the northern portions of the Western Ghâts to Cuttack; thence it extends into Eastern Bengal, Cachar, Assam, and along the bases of the Himalayas (which it does not ascend to an elevation of above 4,000 feet) as far west as the Sikhim and Nepal Terais, and again southwards into Arracan, Pegu, and the north of Tenasserim.

It is impossible to guess why Mr. Gray united this very distinct bird with the preceding species. It is altogether a warmer-colored, richer-toned bird, and its lower-tail coverts are always distinctly ashy, paler doubtless in western, deeper in eastern, specimens, but never to be confounded with *gelastis,* and, *a fortiori,* never with *pulchrata,* (*rupicola, apud* Jerd.)

It appears likely that they lay from December to April.

Mr. V. Irwin sent me a couple of eggs from Hill Tipperah, taken at the end of March; and Mr. F. R. Blewitt says: "This species certainly breeds in December and January. In the beginning of the latter month a pair of young birds was brought to me from the magnificent forest-covered hills some fifteen miles south of Sumbulpore.

"Here I found the birds in great numbers, and in the early mornings and evenings the forests resounded with their thrice-repeated deep guttural 'coo,' so unlike that of other Doves.

"At this time the Doves were single or in pairs,—a certain indication of the breeding season. My experience leads me to suppose that this species congregates in flocks after the breeding season, for in March 1869 I found a flock some twelve miles south of Seoni, (Central Provinces).

"It was, I think, on the 2nd January that the young birds were brought to me; and exactly six weeks later the female laid her first egg, and the second two days later, in the made nest of cloth and cotton previously placed in the cage. The birds did not, I should note, sit on these eggs, neither on those subsequently laid by the female in March, April, and May, when she ceased to lay. The man who brought me this pair returned two days after with a nest and two eggs, which he very positively declared to belong to this species. He had secured them in the forest from whence he had brought the young-ones. Though I did not myself take this nest, I saw no reason to doubt the man's statement. The birds were in great numbers and were certainly breeding, and I feel certain that the eggs and nest were really of this species. The latter was neatly constructed of twigs, circular in shape, with the egg cavity somewhat deep, certainly unlike the 'platform nest' described by Captain Hutton.* The pair I have are very tame, and the coo of the male (I have not heard the female) is far oftener heard of a morning and evening than during the day. When irritated, they utter a peculiar loud hissing kind of note. I have not met with this Dove in the Raipoor District, though very likely it is to be found in the ranges of hills west and south."

The eggs of this species, sent me by Mr. Irwin from Tipperah and from Raipoor by Mr. Blewitt, vary a good deal in size, and are, just like so many other Doves' eggs, more or less broad regular ovals, pure-white, and fairly glossy.

They seem to average a good deal smaller than those of *T. pulchrata,* but then most of my eggs were laid in confinement by a young bird. They vary in length from 1·05 to 1·23, and in breadth from 0·86 to 0·95.

794.—*Turtur cambayensis, Gmel.*

The Brown Turtle Dove breeds pretty well all over the plains of India and in the outer ranges of the Himalayas to an elevation of 4,000 or 5,000 feet.

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* Hutton's bird was *pulchrata,* not *meena.* He sent me both birds and eggs; and, as a fact, *meena* never occurs about Mussoorie.

The earliest nest I ever obtained was at Etawah on the 1st January, and the latest at Agra on the 2nd August: the first contained one, the second two, fresh eggs.

The nest is a very slight one, commonly placed in low trees or shrubs, often thorny ones, at no great height from the ground, but occasionally about the roofs or in nitches of buildings. The nest is composed of thin twigs, grass stems, and sometimes a root or two, but has no lining.

Like their near ally *T. senegalensis*,—the Palm-Dove of the interlinked portions of Africa and Asia,—they build at times in Palms. I have found several nests of this species in the bristling crowns of young wild Date trees, (*Phœnix sylvestris*).

They have certainly two broods, and often I think three, in the same nest, successively.

Two is the regular complement of eggs, but I have very often found only 1 incubated one, or a single young bird, in a nest.

Mr. A. Theobald writes: "On the 15th August, at the Salem railway station, I found a nest of this bird, placed between the leaves of a plant of the *Agave americana*, not above three feet from the ground. The nest was the usual irregular platform of dry pieces of grass stems and small thin twigs carelessly put together, and contained the usual two milk-white eggs; but the situation seemed to me to be unusual."

Mr. A. Anderson remarks: "Our four species of resident Doves require little or no comment as regards their nidification, for there is a painful *sameness* about their nests, and no one cares to have a series of pure-white eggs. There is this difference, however, that while *Turtur risorius* and *T. cambayensis* court human habitations, *T. suratensis* and *T. humilis* show a decided predilection for building in shrubs, hedge-rows, and even trees.

"In 1863 I had occasion to have a standing camp for some ten days; and a pair of *T. Cambayensis* soon discovered what appeared to them an eligible site for a nest in the verandah of my single-pole tent. At first, I kept the inner *chicks* invariably down, at the side the Doves used to enter from, so as to allow them to construct their nest unmolested, but in the course of two or three days this precaution was quite unnecessary.

"The nest, if such it can be called, was placed close to the fringe of the *kunnaut*, on one of the corner ropes, where it is double for some six inches, and there knotted. The double portion was just broad enough, being three inches apart, to support the nest with careful balancing; the *knot* acted as a sort of *buffer*, and prevented the twigs from sliding off, which most assuredly would otherwise have been the case, for the rope just there was at an angle of 45°. My tent had to be struck, before the eggs were laid.

"On another occasion, a pair of these Doves built on the outer ledge of a glass window-sill in my office room, where I had ample opportunity for observing their habits: both birds took their turn pretty equally on the eggs, as also in feeding their young; the male bird frequently fed the female as well.

"I believe that Doves rear several broods during the year; I have found them breeding at all seasons."

Writing from Mussoorie, Captain Hutton tells us that the Brown Turtle Dove "arrives at 5,000 feet like the others about March or April, departing again in autumn. Its eggs are two and pure-white. I have observed in this, as well as in the foregoing different species of *Turtur*, a tendency in the eggs to become suddenly pointed or slightly nipple-shaped at one end."

These eggs are, as usual, pure-white and commonly very glossy. They vary comparatively little in shape, though a good deal in size, and are typically rather broad, nearly perfect, ovals. Although in all this family the size of the eggs varies greatly, those of this species are, as a body, smaller than those of *T. pulchrata*, *Calcophaps indicus*, and *T. suratensis*, but about the same size as those of *T. humilis*. They are a very pure-white, seldom if ever exhibiting that creamy tinge typical in *humilis* and not uncommon in *risoria*.

In length the eggs vary from 0·88 to 1·18, and in breadth from 0·75 to 0·9; but the average of forty eggs is 1·01 barely by 0·86 full.

795.—*Turtur suratensis, Gmel.*

The Spotted Dove breeds almost throughout the more humid and better-wooded portions of India, alike in the plains and in the hills up to elevations of 5,000 or 6,000 feet. It eschews, as a rule, those provinces and districts where the rainfall is scanty, and in Upper India chiefly affects the sub-montane districts, whence, as summer approaches, many migrate to the lower forest-clad hills and valleys, where also a good many are permanent residents. In dry tracts, such as Cawnpoor, Etawah, and Agra, they are but rarely seen, and still more rarely found breeding, (though I did once find a nest in Etawah,) while at Bareilly, Bijnour, and Shahjehanpoor they are the commonest Dove, so common that I have taken a dozen nests at the first-named station in a morning. The nests are slight and loosely put together, of thin twigs, with a few roots or a little grass, and are placed as a rule in any shrub or low tree, apparently quite at haphazard, but usually at no great height from the ground, and very often within reach of a man's hand. Occasionally a nest will be found in ruined buildings or in some wide open cavity in a tree, but never much overshadowed. The birds seem to like light and air greatly, and in most cases affect no sort of concealment, but build their nests in the most open and visible situations, and stick to them most fearlessly until absolutely forced to leave.

They lay invariably, so far as my experience goes, two eggs, and have always two and often, I believe, several broods, during the year, and these too, if not disturbed, in the same nest.

Captain Unwin remarks: "I took a nest of this species, containing two fresh eggs on the 29th April in the Agrore Valley, shooting the male as he flew off the nest. This was placed about three feet from the ground in a thick tangled bush which overhung a watercourse."

From Murree, Captain C. H. T. Marshall tells us that the Spotted Dove breeds in the surrounding hills, as well as in the plains below.

From Mussoorie, Captain Hutton writes that this species is "abundant in the Dhoon, and arrives in the hills in the end of March, leaving again in the autumn. It breeds at about 5,000 feet and lays two white eggs. Captain Tickell says: 'Eggs, two to six; I have never *seen* more than two in any nest."

Writing from Kumaon, Mr. R. Thompson remarks: "The Spotted Dove is the most common and abundant of the family in the Lower Himalayas, remaining in the lower hills throughout the winter, and is a hardy, easily domesticated bird. I have had some which have lived in captivity for years, and even bred in a large cage.

"The nest is composed of from about fifty to one hundred and fifty small twigs and roots laid loosely together, that portion of a bush or tree being selected for the purpose which will give the broadest foundation, no matter whether it be the inter-twining of many slender branches or a hollow in a thicker one.

"The breeding season commences as early as February in the warmer valleys, and continues to the end of October. Two or even more broods are reared during the season.

"The eggs are pure white and two in number, and nearly perfectly oval. The young remain in the nest till able to fly, when they come out and perch in the branches, but are easily frightened out of the nesting tree on the approach of a person, and not being able to sustain a protracted flight can easily be taken, if followed up.

"The Indian Corby (*Corvus Levaillantii*) is a vile and bitter enemy of this and all the other Doves, prosecuting his search for their eggs and young-ones with most unflagging energy. The Common Magpie (*Dendrocitta rufa*) also is another great thief of eggs.

"On a nest being robbed, the parent birds will forthwith set to work and build another, and if that be robbed in its turn they will still go on seeking new sites, building new nests, and laying fresh eggs.

"The female sits very close on her nest, but if forced from it she will at times fly, or in fact throw herself down on the ground before the intruder and will then mimic before his astonished gaze all the actions and efforts of a wounded bird trying to escape its pursuers, and thus endeavor to turn him from the nest.

"In their selection of sites for their nests these birds show very little intelligence, suiting themselves to the first place they find handy, often amongst old furniture in the verandah of a house, cornices of old buildings, low hedges and bushes, or even the lopped trunk of a tree, if a flat surface is left sufficient to place the nest on, and often in the most exposed situations, where the wretched birds are sure to pay the penalty of their imprudence."

This species, according to Mr. Hodgson, breeds almost throughout Nepal, laying from February to May. He notes:—

"*April 22nd, Jaha Powah.*—Two nests in the midst of small trees, a rude congeries of hard twig-like grasses and grass-like twigs. One fresh white egg in each."

Mr. Gammie says: "Breeds freely in the lower hills of Sikhim. On the 20th May I took a nest near Mongphoo, at an elevation of about 3,000 feet. It was a mere apology for a nest,—a loose pad through which the eggs could be seen from below, 5 inches in diameter and less than an inch in thickness, composed of roots and a few fine creeper stems excessively loosely put together. It was placed in a small tree and contained two much-incubated eggs.

"I have found this species breeding in May and June from the plains up to 4,000 feet. The nest is always of the same type, made of twigs, and the eggs two in number. It is not a permanent resident of the hills, but comes up from the plains in early spring and leaves in November. It is never found in forests, and prefers places that are well covered with native crops with a few standing trees about. It is most destructive to the dry-ground rice, buckwheat, and other crops."

From Kotagherry, Nilghiris, Miss Cockburn writes: "Doves are very careless in the construction of their nests, and this species forms no exception to the rule. A few small thin twigs, rudely put together, in a low branch at the edge of a thicket, or in some Bramble bush, so slightly shaded by leaves that the nest can be easily seen by the most casual observer, are the places invariably chosen by these inoffensive birds; they never appear to suspect that mischief may befall their nests. I have often had my eye fixed on a Dove for some minutes, while she was sitting on her eggs, and still she would not leave her nest. These Doves build in the months of March and April, and never lay more than two white eggs, of which if one ever be taken the birds desert the nest."

The eggs vary very greatly in size, and decidedly average less than *T. risoria* and *T. pulchrata.* They are typically the usual broad oval, but, as in other kindred species, elongated and pointed varieties occur. They are pure white and glossy.

The eggs vary in length from 0·95 to 1·17, and from 0·75 to 0·95; but the average of thirty-three eggs is 1·06 by 0·82.

795 *bis.—Turtur tigrina, Tem.*

Although I entertain strong doubts, (*vide* STRAY FEATHERS, Vol. I., p. 460,) as to the possibility of maintaining the specific distinctness of the Malay Turtle Dove, I still for the present retain the name to indicate the form that in the Indo-Burmese countries and the Malay Peninsula replaces our Indian race.

Writing from Upper Pegu, Mr. Eugene Oates remarks that this bird is "common everywhere except on the hills, where I did not meet with it. It seems to breed at all times of the year. Two eggs measure 1·215 by 0·88, and 1·21 by ·88. They are of course pure white. The nest is generally placed low, *i. e.*, under fifteen feet from the ground, in bamboo bushes or shrubs."

Again, writing from Wan in Lower Pegu, he remarks: "The nest of this bird is to be found all the year through. It is a common bird in the plains, but becomes rather rare in the various hill tracts. The nest is built flimsily of fine twigs, so loosely put together that the eggs may be seen from below. It is generally placed in thick bamboo brakes at various heights, but most frequently at from ten to twenty feet from the ground. Eggs, invariably two in number. A good thick jujube tree is often chosen by this bird for the purpose of nesting."

The eggs of this race or species are, like those of all its congeners or *affines,* pure or nearly pure white, very smooth and fine, varying from faintly to fairly glossy.

In shape they seem to be rather long ovals, conspicuously pointed towards one end, and sometimes more or less pointed at the other also.

Two sent me by Mr. Oates measure 1·2 by 0·88, and 1·22 by 0·77.

796.—*Turtur risorius, Lin.*

The Indian Ring Dove breeds throughout the plains of India, and in the hills also, up to elevations of from 2,000 to 5,000 feet, according to locality. Jerdon says that it does not occur in the countries east of the Bay of Bengal, but it is really found in Upper Pegu at any rate, and the nest has been taken at Thayetmyo.

As for the breeding season, we may say—

> "Crows have their time to build, and Larks
> For breeding and connubial love,
> And other birds to lay and hatch—but thou,
> Thou hast all seasons for thine own, O Dove!"

I myself have taken the eggs in every month from December to August, and I have no doubt that others have found them (though the bird is so common that no one writes about it) in the remaing quarter.

The nest is placed on any bush or tree, prickly and thorny sites, such as are afforded by the *Zizyphus*,—wild Date, Babool, *Euphorbias*, &c., being often but by no means universally selected. Generally the nest is within fifteen, not very rarely within five, feet of the ground, but again *I have* found it thirty or forty feet up in a large tree. The nest is placed indifferently in a fork, in amongst numerous prongs, on a broad horizontal bough,—anywhere in fact where a secure and sufficiently wide basis can be found,—and is usually a mere platform some 6 inches in diameter, composed of thin twigs and lined with grass stems, with a slight depression in the centre. Occasionally the nest is rather more saucer-like, a few roots or grass stems are not unfrequently intermingled, and I have seen nests composed wholly of grass.

Like our other Doves, they lay two eggs as a clutch, and rear several successive broods.

Captain Hutton says: "This is common in the Dhoon at all seasons, but only visits Mussoorie during summer, arriving on the hills about the end of March and returning to the plains in October. It breeds in April, May, and June, making a loose platform nest of dried twigs with a few roots within. The eggs are two in number and pure white."

Mr. A. Anderson writes: "Since forwarding my former notes on the nidification of Doves generally, I have discovered a curious nesting-site for *Turtur risoria*, viz., the *bare ground*. On the 20th November (of the present year), while drawing sandy downs, covered with low flowering grass, such as the *Desert Fox* delights in, a Dove was flushed from off her nest which contained a pair of fresh eggs. These clearly belonged to *T. risoria*, but not having seen the bird myself, and identification in a case of this sort being a matter of absolute necessity, I replaced the eggs, and subsequently shot one of the parent birds.

"The nest,—if such it can be styled,—consisted of a few dry twigs and grass stalks which rested on the bare sand. There was no tree nearer than a mile, but the ground on all sides was covered with grass seeds which constitute the chief food of these birds; and this pair were evidently sensible enough to adapt themselves to the force of circumstances, even at the expense of being considered somewhat eccentric in their selection of a site for their homestead."

The eggs are usually broad and perfect ovals, white and glossy. They vary a good deal in size; but, as a whole, are, excepting those of *pulchrata*, the largest of all our Doves' eggs. Although many might be correctly enough described as pure white, yet, when contrasted with the eggs of the Blue or Green Pigeons, the vast majority of them are seen to have a just perceptible ivory tinge. This is not so conspicuous as in the eggs of *T. humilis*, but still it exists.

In length they vary from 1·05 to 1·25, and in breadth from 0·85 to 1·0; but the average of fifty-eight eggs is 1·16 nearly by 0·92 full.

797.—*Turtur humilis, Tem.*

The Ruddy Ring Dove breeds in all parts of India, and extends into Burmah; but it is very capriciously distributed, and I am unable to say what kind of country it prefers, and why it is common in one district and rare in a neighbouring one in which all physical conditions appear identical.

It is very common in the bare arid tree-less region that surrounds the Sambhur Lake. It is common in some dry well-cultivated districts, like Etawah, where there are plenty of old Mango groves. It is very common in some of the comparatively humid tracts, like Bareilly, and again in the Sâl jungles of the Kumaon Bhabur and the Nepal Terai. On the other hand, over wide extents of similar country it is scarcely to be seen. Doubtless there is something in its food or mode of life that limits its distribution, but I have never yet been able to make out what this something is.

Eggs may be found any time between January and July, but my impression is that normally they have only two broods, and lay for the first as a rule in January, for the second in May or June.

I have always found the nests at or near the extremities of the lower boughs of very large trees, at heights of from eight to fifteen feet from the ground, and laid across any two or three convenient horizontal branchlets. As a rule, the nests are excessively slight structures, composed of a few slender sticks or grass stems, or both, so loosely and sparsely put together that the eggs can generally be spied from below through the bottom of the nest.

Two is the number of the eggs.

I reproduce an extract from a paper on the nidification of this and other species which I contributed some years ago to the Ibis. It was written from Bareilly in June:—

"One more piece of good luck yet remained for us. For weeks I had known that our smallest Dove, the beautiful little *Turtur humilis,* was sitting. Everywhere the males, conspicuous in their tender lilac grey suit with rich ruddy vinous mantle and black velvet necklaces, were to be seen busy on the grass, but not a single lady was visible,—obviously the white kid was on the knocker, if only one could find the house, but this had fairly puzzled us. Just as I was entering the bungalow and taking a last loving glance at the fair face of nature so soon to be hidden from me by dingy rooms and sallow faces of disputatious counsel, just as I was drinking in the merry song of the Bulbul, soon to be drowned in monotonous and everlasting pleadings, purporting to show cause for and against everything in creation, I distinctly saw a female *humilis* fly down to her mate off the extremity of one of the lower branches of a huge patriarchal Mango tree. My court was to open at ten, and a great case (all about nothing by the way, simply a vent to the feelings of two irascible bankers who were too fat to turn out and fight out their mutual antipathies like men) was to come on. Nine had struck, I had breakfast to get, and I make it a rule as judge (new brooms always sweep clean, my friends say) to be in my seat by the last stroke of the hour; *nevertheless* I ran off to the tree like any boy and began to scrutinize the branch. After a minute I saw the *eggs,* two in number, exactly over my head, and apparently suspended by only a few cross-threads. I got a high pair of platform steps, used here by masons when whitewashing ceilings, with us a very common operation, and mounted to the nest. It was a tiny network of grass stems so slightly put together that, as I mentioned above, the eggs were clearly visible from below. How eggs could be hatched in such a situation I am at a loss to understand. The slightest storm, and we have had several such lately, would, I should have fancied, fling the eggs far away; but there they were, fresh and unsullied. They were considerably smaller than those of our other common Doves, and distinguishable by a very faint creamy tinge scarcely noticeable, except by contrast with those of the other species. Taken alone, you would say they were pure-white; placed beside the others, you would instantly notice in them a very faint ivory-like tint altogether wanting in the rest."

According to Mr. Hodgson, this species lives and breeds in the lower valleys and the Sâl forests of Nepal, and lays from January to May two or *three* white eggs. I myself never saw or heard of more than two eggs being found in any nest.

The eggs (as a body, the smallest of all our Doves' eggs, except those of *T. cambayensis*, which are of much the same size) are, I think, typically slightly more elongated ovals than those of our other Indian species of this genus. They are of course spotless and glossy, but though I have myself taken pure white ones, by far the greater majority of them are of a pale ivory white, which is very conspicuous when they are placed alongside China-white eggs, such as those of the Blue Rock Pigeon. I may here notice, as a result of the comparison of large series of numerous species, that the eggs of Doves, as a body, appear to me to be slightly less glossy than those of Pigeons, and that while in all species of Doves occasional ivory-tinted examples occur, and in some species such tinting is the normal type of egg, no similar tinting is noticeable in the eggs of wild Pigeons,—I say advisedly wild, because the eggs of birds, even originally wild ones, laid in confinement differ often widely from their normal types, and there is in India a race of Pigeons, one of the feather-footed ones (*Paposh*), commonly known as the Rajah of Putteeala's breed, whose eggs (at least to judge from those of the pair that I kept) are as distinctly of an ivory tint as those of the most characteristic egg of *T. humilis.*

In length, the eggs vary from 0·98 to 1·1, and in breadth from 0·75 to 0·85; but the average of twenty specimens is 1·02 nearly by 0·8.

798.—*Chalcophaps indica, Lin.*

The Emerald Dove is essentially a bird of the forest and jungle, and will never be found at any *great* distance from these, though it may straggle away from its home for a score of miles during the day.

In suitable localities it breeds throughout our Indian Empire, the Nicobar birds separated by Bonaparte as *C. augusta* not being, as the large series I there procured conclusively proved, in any way different from the Continental form.

Throughout India it ascends well-wooded or jungle-clad hills to elevations of from 3,000 to 6,000 feet, according to locality, and is in most of these hills as much a permanent resident as in the forests that lie around their bases.

The earliest nest that I have ever taken was found near Dehra on the 25th February; the latest I secured at Bheem Tal in the height of the rains on the 2nd July.

I suspect, but do not certainly know the fact, that they have two broods.

The nests are placed in some dense bush or low thickly-foliaged tree in forest or jungle, rarely at any great height from the ground, usually just out of reach, but at times quite low. They are more regular saucers than those of other Doves, composed of roots, grass or twigs, but comparatively neat, and, although devoid of lining, with a decided central depression. They may measure from 5 to 6 inches across.

Two eggs, I believe, are always laid. I have seen many nests, but none contained more than this number.

Captain Hutton tells us that the Emerald Dove is "abundant in the Dhoon, frequenting low jungles. It is likewise a true hill-bird up to 5,500 feet throughout the year. It is very partial to the seeds of the castor-oil plant (*Ricinus communis*). The nest is similar to that of Doves in general, being loosely constructed of roots and small twigs laid across each other with little arrangement, so as to form an open platform, which is placed in some low bush, at about two feet from the ground. The eggs are white and two in number. One nest was taken in the Dhoon in March, but others were also found later at Jeripanee (5,500 feet). It flies very rapidly and twists and turns amongst the bushes, so as to render it somewhat difficult to shoot it. The nestling birds are spotted with rusty buff, somewhat resembling those of our Indian Turtle Dove."

At the Nicobars Mr. Davison "found this species breeding in the latter half of February and the beginning of March. The nests were placed in small trees, about six feet from the ground, or laid on the frond of a young Cocoanut Palm at about the same elevation. The nests were built entirely of twigs, but rather more compactly than is usual with Doves; they were mere circular platforms devoid of any lining, and each contained two eggs."

The eggs vary from broad to moderately elongated ovals; some are rather conspicuously pointed just at one end. The shell is fine and fairly glossy. The color varies from very slightly creamy white to white with a decided, though very pale, *café au lait* tinge. They are, of course, entirely free from all markings.

The eggs vary in size from 1·0 to 1·1 in length, and from 0·82 to 0·86 in breadth.

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798 *ter.—Calœnas nicobarica, Lin.*

The Nicobar Pigeon, the most lovely species I really think of the whole group, breeds, so far as is yet known for certain, only in one island of the Nicobar cluster. It may breed in other links of that vast chain of islands which stretches down from the Nicobars to New Guinea; indeed, it very probably does, and stragglers may nest on others of the Nicobars; but its *home*, its breeding headquarters, which we had the good fortune to discover, are in the little, almost absolutely inaccessible, island of Batty Malve.

Of this I said in my account of our cruize amongst the Nicobars, (Stray Feathers, Vol. II, p. 95) :—

"The island appeared to be almost wholly composed of coral, resting unconformably on a base of sandstone. It was low, nearly level, bore a certain amount of high tree jungle and a few patches of Cocoanut, and was in most places covered by an excessively dense undergrowth of some thorny bramble-like shrub, here and there interspersed with a few open plots of grass. The moment the level of the island was gained, the mystery of the black birds was solved,—they were Nicobar Pigeons, and this was *par excellence* the home and stronghold of this magnificent bird. Thousands were flying about from tree to tree, or feeding on the seeds of the undergrowth, (with which we found their crops mostly full). Their nests were as thick upon the trees as ever nests are in a rookery at home. Young-ones in every stage of growth, from naked blind things to birds fully fledged, were to be seen in or along side the nests. They were perfectly tame at first, and fed about on the ground just like other Doves. Though silent birds as individuals, yet from their immense number their occasional *croak, croak,* blended into a continuous murmur heard distinctly above the grinding surf.

" Hundreds might easily have been shot. As it was the whole party, Native and European, were loaded; and, despite unavoidable losses at the time of re-embarking some seventy were safely brought on board."

Mr. Davison, who was one of the party and zealously climbed numbers of the trees to scrutinize the nests more closely, has remarked: " *Calœnas nicobarica* builds a regular Pigeon's nest and always on trees; on Batty Malve, where we found this bird in thousands, almost every thick bushy tree contained several nests. I counted thirteen on one tree, and I must have examined a couple of dozen of these nests. We visited the island rather late. Nearly all the occupied nests contained young, and hundreds of young had left the nest. I only succeeded in finding two eggs, one partially incubated, the other ready to hatch off: the former of these unfortunately got broken on the island; the latter I succeeded in preserving by cutting a hole in one side, and then placing the egg in a small paper tray near an ants' nest. The nests were, as I have mentioned above, regular Pigeons' nests—merely a platform of twigs, very loosely and carelessly put together, and without lining of any kind, and in no single case contained more than one young-one or one egg, so I think we may safely assert that the normal number of eggs laid by this bird is only one. Many of the nests I examined contained young ones only a day or two old, perfectly devoid of even down and with closed eyes; in fact, exactly like the young of the domestic Pigeon when first hatched; other nests contained young that flew from the nest on our climbing the tree. One nest I found was only about ten feet, but the others ranged from twenty to thirty feet from the ground, and were always placed in thick bushy trees.

" In the other islands that we visited in which this bird occurs I could learn nothing as to whether they breed there or not, except on Katchall, where a native told me that they built on trees; but he could neither get me the eggs, nor could he ever give me a description of them or of the number laid: probably it was merely a good guess of his that they built on trees, and that they do not really build on Katchall Island but all resort to Batty Malve to breed. I certainly never met with any but adult birds on the other islands where they occur, but again, on the other hand, while most of the birds were breeding on Batty Malve, others, though only a few, were to be found on Katchall, Treiss, Track, &c."

The egg is of course spotless and pure white, but the shell, though compact, is very finely, almost microscopically, pitted all over, and it has scarcely a trace of any gloss. It measures 1·84 by 1·27.

800.—*Pterocles fasciatus, Scop.*

The Painted Sand Grouse belongs especially to the low ranges of rocky and more or less barren hills that are scattered about the Continent of India, and I have never observed them more than a few miles or so away from the base of these. Throughout the so-called Mewât Hills and the Aravallis which run down from Delhi to Mount Aboo, a broad straggling broken belt of stony, detached, and often barrow-like hills, they are common. In the low bare hills of the North-West Punjab, about the barer parts of the Sewaliks, and on the stony ridges and (during part of the year) the forests of the

Central Provinces, they are tolerably abundant, and in all these localities they are permanent residents and to the best of my belief breed.

Most of the numerous eggs that I have received have been found in April and May, but the nearly allied *exustus* breeds so irregularly and at such different periods that it is very probable that the breeding season of the present species also varies much and is not by any means confined to these two months; indeed, Mr. R. Thompson took a nest near Chandah on the 28th November, and again Captain Butler, of Her Majesty's 83rd Regiment, writing from Mount Aboo, remarks: "I shot a pair of Painted Sand Grouse, with three young-ones not quite full grown, in the plains below, about twenty miles from this, in February last, which shows that *P. fasciatus* breeds in this neighbourhood in the cold-weather, as these young birds must have been hatched, I should say from their appearance, during the previous month."

They make no nest but merely scrape a slight depression in the soil (occasionally, it is said, thickly lined with grass), at some spot more or less overhung or sheltered by a tuft of grass or a low bush, and lay as a rule three, but not uncommonly only two, eggs.

Mr. R. M. Adam says: "This very beautiful bird is common about all the low ranges of hills near the Sambhur Lake, and doubtless throughout the Aravallis. Sometimes it is met with under the shade of the '*tor*' (*Euphorbia Royleana*), about half-way up the hills, but as a rule small parties are generally flushed at or near the base of the hills where the ground is mostly stony.

"My first nest was found on the 3rd April. I have since obtained fresh eggs in May. The nest, I was told, was simply a hollow scraped in the ground, with a number of small pieces of stone round the edge and some loose grass for a lining.

"The number of eggs in each nest varied from two to three, but in one nest four were found. When fresh, the eggs vary from a deep to very pale salmon color, but when blown the color changes in a few days to a rich cream color, and all are pretty uniformly spotted and speckled with light lavender and rusty. They are of a blunt oval form, and measure in length about 1·4 and in breadth nearly an inch."

Writing from Chanda (Central Provinces), Mr. R. Thompson says: "I send you two eggs of *Pterocles fasciatus*, which I took on the 28th November in the Mohurli Forests.

"The nest contained three eggs, of which one unfortunately got broken. It was placed on the ground on a slight rise; neatly and well put together, saucer-like, made of dried grass, bits of dried leaves of bamboo and other plants. The soil was sandy, with a thin forest growing on it, and the nest was placed under the shade of a small tree. There was no cover in the immediate vicinity of the nest; in fact, for three or four yards all round there was nothing but thin short grass. I accidentally arrived at the spot, and whilst talking to a friend the female bird got up close at our feet, and I saw the nest immediately after.

"I can quite corroborate Dr. Jerdon's observations as to the crepuscular habits of this species. It is quite nocturnal, and feeds and goes to water even in the darkest night, as I have seen the birds arrive at the edge of a plain at dusk, and remain feeding and going to water during the dark hours before the moon got up. I have frequently too noted parties of six or seven flitting about noiselessly over an opening in the forest long after sunset.

"During the early part of the rains these birds entirely leave the forests and jungles, and then all through the rains live in the open country, exactly as *P. exustus* do, but are never noisy like the latter.

"Large numbers of the Painted Grouse are taken during the rainy-season by bird-catchers, who, approaching under cover of a screen made of green leaves and twigs, drop a circular net, suspended to a hoop and held out horizontally at the end of a long bamboo, over the birds, which as a rule never seem to know that there is danger at hand."

Mr. E. C. Nunn sent me the first eggs of this species that I ever saw from Hoshungabad. The eggs were of the usual long cylindrical Sand Grouse type, but the coloration resembles that of several of our Indian Goat-Suckers, and but for the careful extraction of the young chick, which accompanied the eggs in spirit, I might have believed them to belong to some large species of Goat-Sucker. The shell is very fine and glossy. The ground color a delicate pinkish fawn, or pale salmon color, here and there finely speckled and spotted and streaked with brownish red, and with more numerous spots and clouds of pale pinky purple underlying, as it were, the primary markings.

Later eight eggs of this species, *viz.*, three nests, were obtained and sent to me from Koochawun, in Jodhpoor, about the 3rd April. They were hard-set. These eggs precisely resembled those above described. Other nests of this species were obtained by Mr. Adam, near the Sambhur Lake, on the 21st May. They were all perfectly fresh, very regular, obtuse-ended, cylindrical ellipsoids, the shell very smooth and glossy, the ground color a delicate pale salmon pink, with a good many, somewhat widely scattered, specks and tiny streaks of brownish red in all the eggs, much more numerous towards one or other end, and with a good many small pale inky purple spots and clouds almost exclusively confined to that end where the markings are most numerous.

Specimens are occasionally met with in which the markings are very sparse, and I have one specimen in which they are absolutely and entirely wanting.

Subsequently, chiefly through Mr. R. M. Adam's kindness, I have secured a very large series of these eggs. I find that in some eggs the ground color is almost cream-colored, though still with a faint pinky tinge; that not unfrequently the markings form a pretty perfect zone towards one end, and that here and there an egg is met with exhibiting six or eight large deep brownish red blotches. Pale pinky white, white, and somewhat buffy stone-color grounds are also met with. The eggs vary a good deal, as may be gathered from the above, but still the type is the same, so that it would be difficult to mistake an egg of this species for that of any other Indian bird of whose eggs I have any knowledge.

No doubt Dr. Jerdon remarks: "I have had the eggs brought me, very cylindrical in form, of a dull earthy green with a few dusky spots;" but these most assuredly were eggs of *P. exustus* and not of our present species, *fasciatus.*

In length the eggs vary from 1·3 to 1·62, and in breadth from 0·93 to 1·05; but the average of forty eggs is 1·42 by 0·98.

802.—*Pterocles exustus, Tem.*

The Common Sand Grouse breeds throughout the dryer and barer portions of the more or less sandy plains of the Continent of India. Rocks and hills, forests and swamps, it equally eschews, and the haunts it best loves, and where its nests may be found in greatest numbers, are scattered fallow or stubble, or newly-ploughed fields, dotted about on and surrounded by large semi-desert plains. As to the breeding season I hardly know what to say. I have found their eggs in almost every month of the year in one place or another, but in the North-West Provinces the majority probably lay from April to June.

Further west and north, where the rainfall is very scanty, they must, I think, have two or more broods in the year.

Khan Nizam-oo-deen, Khan Bahadoor, the well-known Punjab sportsman, who has collected for me for so many years, always kept up a register, showing from day to day the various birds and eggs obtained, the localities in which found, &c., and this he always sent me with each batch of skins and eggs.

From his registers for 1869 and 1870 I find that he took nests of this present species on the subjoined dates in each year: this was at Urneewalla, some fifteen miles east of Fazilka in the Sirsa District.

	1869.	1870.
January	……	……
February	……	3rd, 24th.
March	……	1st, 4th, 12th, 21st.
April	……	21st, 22nd, 27th, 28th.
May	8th, 25th,	1st, 3rd, 5th, 7th, 15th, 28th.
June	16th, 17th, 30th.	11th, 15th, 21st, 30th.
July	1st, 2nd, 5th, 10th, 11th 12th.	23rd.
August	……	……
September	1st, 2nd, 3rd, 7th, 10th.	……
October	……	3rd, 22nd.
November	……	24th.
December	……	7th, 20th.

In some cases three nests were found in a single day. During these two years he sent me so many eggs that I begged him to collect no more, and so after 1870 these eggs are never mentioned.

To quote an abstract I made of his register for 1869: "In no case did he find more than three eggs in one nest. In one instance he obtained five eggs in one spot—three in one place and two about 3 inches distant—but he ascertained that these belonged to two different pairs. Fully half of these eggs were found in fallow fields; the rest in bare waste-land or desert-like sand. In only two cases were the eggs found in any way sheltered or hidden in the roots or tufts of grass. In every case the eggs were laid in a slight depression on the bare ground. No nest of any kind was met with."

This has also been my own experience, except that I have not *at all* unfrequently found the eggs more or less sheltered by low bushes, tufts of grass, or large clods.

Mr. William Blewitt says: "On the 9th March in a field near Bhatoul in the Hissar District I found a nest of this species containing *five* (!) almost fully incubated eggs. They were, as usual, placed on the bare ground in a shallow basin scratched out by the birds some 5 inches in diameter and 2 inches in depth. They all belonged, I believe, to one pair, but in no other instance did I ever meet with more than three eggs in any nest."

I may note here that the Khan Sahib reported that although he had never been able to meet with such a nest, the villagers, where the birds were very common, said that they occasionally saw four eggs in one nest-hole.

From the Sambhur Lake Mr. R. M. Adam writes: "The Common Sand Grouse is found here throughout the year in great numbers. It breeds here, and I have taken the nests in April and May.

"I have seen a nest here at the root of a tuft of sarpat grass, the leaves of which protected the bird from the sun's rays. The nest had a lining of loose pieces of grass, and contained three eggs."

This is another instance of the variable habits of this species. I must have taken at least thirty nests, the Khan Sahib fully double that number, and neither of us ever saw any sort of lining to the nest-hole, and yet not only Mr. Adam but other good observers have vouched for finding more or less of a grass lining on many occasions.

Captain Cock tells me that "the Common Sand Grouse lays its eggs in a hollow amid loose stones (I speak of the environs of Nowshera) in the months of May and June, usually on barren arid ground, the heat of which is terrible at that time of year. I have frequently found the eggs with their albumen semi-coagulated from the heat, and I fancy that if the bird left its eggs for any time during the heat of the day they would be baked!

"They lay three eggs, blunt at both ends. There is no nest to speak of, only a bit of stick or two."

Mr. A. Anderson remarks: "The Common Sand Grouse breed throughout the Doab in March, April, and May (and no doubt later on), laying the orthodox number of *three* eggs, and *never four*, as stated by Jerdon. As a rule, there is no attempt at anything like a nest, the eggs being deposited in a slight depression on the bare ground, scraped out by the birds most frequently in an extensive plain.

"The eggs in my collection measure 1·4 and 1·6 in length by 1·0 in breadth; they are perfectly elliptical, slightly compressed in the centre, and equally blunt at both ends, which character is, I believe, common to the whole group.

"At times they lay only a pair of eggs. On the 2nd March 1873, when roaming over a plain covered for miles with *reh*, which gave the ground the appearance of being carpeted with crisp snow, I flushed a Sand Grouse which flew *perpendicularly* out of sight. Looking down, I found a pair of eggs which were laid *parallel* to each other, in a slight hollow, sparingly lined with dry grass stems. My camp being close to this place, I amused myself in watching the birds incubating, feeding round about their nest, and dusting themselves after the fashion of fowls. On the 4th (there being still only two), I removed the eggs, shooting the sitting bird, which proved to be the male. As I approached the nest, the bird glided off, and skulked away in a crouching posture, so as to avoid detection, and then squatted.

"On the 19th October last, my friend Mr. Hastings took a clutch of eggs at Etawah which he sent to me; these eggs were either unusually late or early, as the case may be.

"Many years ago, I took a sitting of three eggs on an extensive island belonging to the Futtehpoor District, when driving for pigs and wild-cattle."

The eggs are of a very peculiar shape, long and cylindrical like those of a Night Jar. The texture is fine and smooth, and they have generally a fine gloss. Not only in shape, but in markings also do many of them strongly resemble those of some species of Night Jar. The ground color varies much; in some it is a pale somewhat pinkish stone color, in others greyish or dingy greenish white; in some pale *café au lait*, in others a somewhat light olive brown. Typically they are thickly spotted, streaked, or irregularly blotched, pretty uniformly over the whole surface, with two sets of markings, the one of darker or lighter shades of olive brown, the other a sort of pale inky purple, and these latter, which are most commonly streaks and clouds, seem to underlie the others. Different eggs vary much in the distribution, size, and intensity of these markings, as also in the relative proportion of the extent of surface covered respectively with what I may call the primary and secondary markings; in some almost the whole ground color not occupied by the primary markings is clouded with the pale inky purple, in others only here and there a few spots of this color are traceable; in some all the markings are small, very thickly set, and freckly, in others they are bold, large, excentrically-shaped blotches, comparatively thinly distributed over the surface. Some of the eggs are, as a whole, very much darker-colored than others, and in some the ground color might perhaps be best described as a faintly greenish-grey. As a rule, the paler the ground the paler the markings, and *vice versâ*. Exceptionally beautifully marbled eggs are met with, as also unmottled pale creamy varieties. I have never, however, seen one that could be mistaken for an egg of *fasciatus*.

The eggs vary in length from 1·32 to 1·6, and in breadth from 0·95 to 1·11; but the average of seventy eggs is 1·45 by 1·03.

803.—*Pavo cristatus, Lin.*

The Common Peafowl is found in suitable localities throughout India wherever there is cover, natural or artificial, as of sugarcane and other dense crops, and a plentiful supply of water. Canal banks fringed with trees and traversing rich cultivation are their especial delight, and in such localities I have found a great many nests, my search for them being stimulated by the conviction that a wild Peahen's eggs are delicious eating, far preferable to Turkey's or indeed any others that I have ever tried. They are not confined to the plains, but alike in the Himalayas, Nilghiris, and other suitable ranges, breed up to elevations of from 3,000 to 5,000 feet.

The great majority lay during July and August, but I have found eggs as late as the middle of October. The nest is made in amongst thick grass or in dense bushes, often on a sloping bank, and is a broad depression scratched by the hen, and lined with a few leaves and twigs or a little grass. I have never myself found eggs in the abnormal situations described below by Mr. A. Anderson.

I have never found more than eight eggs in any nest, and I think that six or seven are the usual complement; but natives say (and see also Miss Cockburn's remarks) that they lay at times much larger numbers.

Captain G. F. L. Marshall says: "The Peafowl breed during the rains in the Saharunpoor, Bolundshahr and Aligurh Districts. The eggs are laid on the ground, usually among the thick underwood on the canal banks.

"Near Bolundshahr I got six eggs on the 27th July; the shell is much pitted, pure fawn color in some, and stained with darker brown in others.

"Again in the Aligurh Districts I found four fresh eggs on the 5th August; they were laid on the bare ground, inside, but near the edge, of an old heap of dry sticks, round which grass had sprung up tall and thick; this small thicket was in an open plain close to a road with no bushes or other undergrowth near.

"But they sometimes breed later and choose more exposed situations even than this. On the 31st August I took three fresh eggs laid without any attempt at concealment whatever: they were on the ground on a dry patch amongst very short grass under the trees on the canal bank; there was no undergrowth and the eggs could be seen from some distance."

Mr. R. M. Adam remarks: "I had eggs of this species brought to me in Agra on the 14th October. The eggs were a good deal incubated.

Mr. A. Anderson writes to me that "the Peafowl breeds in the North-West Provinces, during June, July, and August, the latter being about the most general month. About November the young birds are the size of chickens, and are then well-worth shooting for the table. Sometimes, though rarely, I have seen ten and twelve chicks following one hen; but these, no doubt, are amalgamated broods, for I have never found more than six eggs in one nest (I believe however that they occasionally lay up to seven or eight), and sometimes only three or four.

"Three years ago, a chuprassy, who, from long practice, had become somewhat arboreal in his habits, brought me three fresh Peafowl's eggs from an old nest of *Gyps bengalensis*. Shortly afterwards I saw the nest, which was situated on a huge horizontal bough of a Burgot, in the centre of some Dhák jungle, and on which all the Peafowl in the neighbourhood were in the habit of roosting. I have every reason to believe my chuprassy, because he had no object in wishing to deceive me, and my own experience is in favor of these birds laying at high elevations (the same remark is applicable to a good many gallinaceous birds), for I have on several occasions taken their eggs from the roofs of huts in deserted villages, high mounds, and from the tops of *pucka musjids*, on which rank vegetation grew to the height of two or three feet."

From the Nilghiris Miss Cockburn writes: "The Peahen lays from ten to fifteen eggs, and forms a nest by scratching a slight place in the ground and gathering a few dry leaves and sticks. The eggs are generally found in June and July, and are a dingy buffy white."

The eggs are typical Rasorial ones, much like gigantic Guinea-fowls' eggs, with thick, very strong and glossy, shells, closely pitted over their whole surface with minute pores, which are, however, more deeply indented and more conspicuous in some specimens than others. In shape they vary much, some are very broad, some decidedly elongated, ovals, so that some more resemble in shape an English Pheasant's egg, and others are more like a Turkey's: all are more or less pointed towards the small end. The color, within certain limits, also varies much; some are almost pure white, others are a rich *café au lait* or reddish buff; others again are dingy yellowish buff, but typically they are a pale pinkish *café au lait* color. Occasionally specimens are met with thickly freckled with pale reddish brown, feeble reproductions of the Minaul's eggs; but the vast majority are entirely unspotted.

In length they vary from 2·55 to 3·0, and in breadth from 1·92 to 2·2; but the average of forty eggs is 2·74 by 2·05.

803 *sextus.—Megapodius nicobariensis, Blyth.*

The Nicobar Megapode breeds in most, if not all, the islands of the group from which it derives its name. On Table Island, an islet of the Great Cocos, I had reason to think that they also occurred and bred.

While in these islands both Mr. Davison, who obtained numbers of their eggs, and myself endeavored to learn all we could of the nidification of the Megapodes, and I shall quote here what he and I have already recorded, (Stray Feathers, Vol. II, p. 276 *et seq.*,) on this subject.

Mr. Davison says: "I have seen a great many mounds of this bird. Usually they are placed close to the shore, but on Bompoka and on Katchall I saw two mounds some distance inland in the forest. They were composed of dried leaves, sticks, &c., mixed with earth, and were very small, compared with others near the sea-coast, not being above three feet high and about twelve or fourteen feet in circumference; those built near the coast are composed chiefly of sand mixed with rubbish, and vary very much in size, but average about five feet high and thirty feet in circumference; but I met with one exceptionally large one on the Island of Trinkut, which must have been at least eight feet high and quite sixty feet in circumference. It was apparently a very old one, for from near its centre grew a tree about 6 inches in diameter, whose roots penetrated the mound in all directions to within a foot of its summit, some of them being nearly as thick as a man's wrist. I had this mound dug away almost to the level of the surrounding land, but only got three eggs from it, one quite fresh and two in which the chicks were somewat developed.

"Off this mound I shot a Megapode, which had evidently only just laid an egg. I dissected it, and from a careful examination it would seem that the eggs are laid at long intervals apart, for the largest egg in the ovary was only about the size of a large pea, and the next in size about as big as a small pea. These mounds are also used by reptiles, for out of one I dug, besides the Megapode's eggs, about a dozen eggs of some large lizard.

"I made careful enquiries among the natives about these birds, and from them I learnt that they usually get four or five eggs from a mound, but sometimes they get as many as ten; they all assert that only one pair of birds are concerned in the making of a mound, and that they only work at night. When newly made, the mounds (so I was informed) are small, but are gradually enlarged by the birds. The natives never dig a mound away, but they probe it with a stick or with the end of their *daos*, and when they find a spot where the stick sinks in easily they scoop out the sand with their hands; generally, though not always, filling in the holes again after they have abstracted the eggs. The Nicobarese and the Malay and Burmese traders take numbers of these eggs, which they generally cook by placing them in hot ashes; but they also sometimes boil them quite hard, and they do not seem to be very particular whether the egg is fresh or contains a chicken in a more or less advanced stage of development. The Nicobarese at any rate appear to relish a boiled or roasted chicken out of the egg quite as much as they do a fresh egg.

"The eggs are usually buried from 3½ to 4 feet deep, and how the young manage to extricate themselves from the superincumbent mass of soil and rubbish seems a mystery. I could not obtain any information from natives on this point, but most probably they are assisted by their parents, if not entirely freed by them, for these latter, so the natives affirm, are always to be found in the vicinity of the mounds where their eggs are deposited.

"We obtained about seventy of these eggs, sixty-two of which were preserved; these vary much both as regards color and size, and they undoubtedly darken very materially by being buried in the sand, for I have found that eggs containing chickens in a more or less advanced stage of development were dark-colored, the depth of shade increasing as the eggs approached the hatching point; but it does not follow from this that all dark-colored eggs will be found to be not fresh, for very often very dark-colored eggs are laid. There are three types of eggs—a dull clayey pink, an earthy yellow, and an earthy brown—of several shades.

"The surface soil of the mounds only is dry; at about a foot from the surface the sand feels slightly damp and cold, but as the depth increases the sand gets damper but at the same time increases in warmth."

I cannot myself agree with Davison about the coloring of the eggs; on the contrary, the brightest pink egg we got was one which the bird had not even had time to bury before she was surprized; moreover, the *shells* tell their own tale, almost all the small holes in pink eggs, most of the medium-sized ones in the buffy stone-colored ones, and all the largest holes in the brownish ones.

I saw a considerable number of these mounds, chiefly at Galatea Bay, and there I examined some of them very minutely. These were situated just inside the dense jungle which commences at springtide high-water mark. It appeared to me that the birds first collected a heap of leaves, cocoanuts, and other vegetable matter, and then scraped together sand which they threw over the heap, so as not only to fill up all interstices, but to cover everything over with about a foot of pure sand,—I say sand, but this term is calculated to mislead, because it does not contain much silex, but consists mainly of finely triturated coral and shells. After a certain period, whether yearly or not I cannot of course say, the birds scrape away the covering sand-layer from about the upper three-fourths of the mound, cover the whole of it over again with vegetable matter, and then cover the whole in again with the sand. In the large mound, an old one, into which I carefully cut a narrow section from centre to margin, this arrangement was very perceptible; in it I thought I could trace, by the more or less wedge-shaped portions of pure sand along the base (the remnants of successive outer coverings of sand, the basal portions of which have never been removed), ten or perhaps eleven successive renovations of the mound; even the central portion was perfectly cool. The vegetable matter had in a great measure disappeared, leaving only the hard woody portions behind, but showing where it had been by the discoloration of the sand. The decay of the vegetable matter and the bird's habit (as I judge from appearances) of not removing the basal portion of the sandy covering at each renovation, sufficiently explain why the mounds increase so much more in radius than in height.

A smaller mound, one as I take it still in use, though I could find no eggs in it, contained a much greater amount of vegetable matter, and was sensibly warm inside. I could make no section of it, as it was too full of imperfectly decayed vegetation. I believe that the bird depends for the hatching of its eggs solely on the warmth generated by chemical action. The succulent decaying vegetation, constant moisture, and finely triturated lime, all combined in a huge heap, will account for a considerable degree of artificial heat.

I am by no means satisfied that only one pair of birds use the same mound; on the contrary, the Nicobarese I had with me that day explained, as I understood, that though one pair begin the mound, they and all their progeny keep on using and adding to it for years, and as "*Cussem*," or whatever the wretch's soubriquet was, interpreted, the men with us had, during the previous month, taken at one time some twenty eggs out of one and the same mound, which also they took us to see, and which was perhaps five feet high and sixteen or eighteen feet in diameter, and which was the freshest-looking I had seen.

The eggs are excessively elongated ovals, enormously large for the size of the bird. They vary a great deal in size and a good deal in shape; all are much elongated, but some are more like Turtles' eggs than those of a bird. When first laid, they are of a uniform ruddy pink, as we know from having obtained one before the bird had time even to bury it; after being buried, so long as the egg remains quite fresh, it continues a pale pink, but as the chicken develops within, the egg becomes a buffy stone color, and when near about hatching it is a very pale yellowish brown. The whole coloring matter is contained in an excessively thin chalky flake, which is easily scraped off, having a pure white chalky shell below; this outer colored coat seems to have a great tendency to flake off in spots, specks, and even large blotches as the chicken is developed within. Quite fresh-laid eggs rarely exhibit any white marks of any kind, while those more or less approaching hatching (one cannot say incubated in this case) are invariably more or less mottled with white. Occasionally fairly fresh eggs are dug out, bearing along their entire length on one side two parallel white lines made apparently by the claws of the mother bird when scraping the sand over them. The eggs are always a little pointed towards one end, and some, especially the less cylindrical ones, are conspicuously so. The shell is entirely devoid of gloss, and the surface is everywhere roughened with innumerable minute pores, which occur equally in the exterior colored flake and the white somewhat less chalky, shell beneath.

In length the eggs vary from 3·01 to 3·4, and in breadth from 1·9 to 2·25; but the average of sixty-two eggs that I have carefully measured is 3·25 by 2·07.

804.—*Lophophorus Impeyanus, Lath.*

The Moonal breeds throughout the forest-clad ranges of the Himalayas, at any rate from Cashmere to Bhootan, at elevations of from 7,000 or 8,000 to fully 12,000 feet.

The breeding season is in May and June. They have only one brood, and the female alone incubates the eggs and rears the young.

Usually, the eggs are laid in a bare depression in the ground, scratched by the female, under the shelter of some overhanging rock, the massive root of some large tree, or some thick tuft of fern, but at times the hollow is more or less lined with dry grass, dead leaves, or a little moss.

In localities where they are very numerous, *e. g.*, on the "*Chor*" not far from Simla, several nests may be found within a circle of a hundred yards, as if the females were, even at this season, (as they are at all others,) more or less gregarious.

Six is the largest number of eggs that I have known to be found in any one nest, and four or five is certainly the usual number; but native sportsmen talk of finding occasionally as many as a dozen.

Long ago my friend Mr. Frederic Wilson, the well-known "Mountaineer," remarked: "The female makes her nest under a small overhanging bush or tuft of grass, and lays five eggs of a dull white, speckled with reddish brown. The chicks are hatched about the end of May."

He now writes to me from Gurhwal:—

"The Moonal breeds at elevations from 8,000 to 12,000 feet in all sorts of forest. Some begin to lay early in May, others not till the end of the month. The nest is placed in much the same situations as that of the Koklass, that is to say, always under some slight shelter, an overhanging bush or tuft of grass, or rock or stone, or in the hollow at the foot of a tree, or under an old trunk. It is merely a hole scraped in the ground, but bits of grass, leaves, &c., which are round it, are often dropped in; and, with some feathers from the bird, form a sort of lining. Nothing is *brought* in to make a nest either by the Moonall or, I think, any others of our Hill game-birds. I have generally found five eggs in a nest, sometimes only two or three, but never more than five. In a small work which I lately read, FIVE WEEKS IN THE HIMALAYAS, by Captain Matthias, the author mentions finding a Moonal's nest with nine eggs, but I fancy he must have mistaken the nest of a Koklass for that of a Moonal. The eggs are about 2·75 long and 1·75 wide, buffish white, powdered with chocolate and in some with spots and blotches of some color. If the eggs are hatched under a domestic fowl, the chicks take readily to the foster mother, but often seem at a loss how to get on with her. The young broods in the forest are generally found with the hen-bird only. Indeed, I doubt if the Moonal *pairs* at all. Where they are rare, they may do so; but where numerous, I think not. For a couple of months the chicks are alike in color, and then the males begin to change slightly. At four months they are easily distinguishable, though they get none of the bright feathers till the second moult. Then they get the full plumage of the male bird with the exception of the seventh long feather of the wing, which keeps the brown color of the hen till the third moult."

Writing from Dhurmsala, Captain Cock said: "The Moonal breeds in May and June, and lays from five to eight eggs in a hollow on the ground, either under some rock or fallen tree, or a thick Rhododendron bush. The eggs vary in color, but not in shape,—some being spotted with broad spots, and others speckled with fine specks. The eggs are very like those of the Turkey. The nidification of this bird depends much on the year. In mild winter, when the snow is off the ground, they begin earlier. No nest to speak of is made, but a few feathers are sometimes found about the eggs."

Captain Hutton writes: "These birds do not occur so low down as Mussoorie, but are found in abundance on the next range. In days of yore they were found at Simla, but civilization has of late years banished them to less disturbed localities. It makes no nest, but lays its eggs on the ground; the number not satisfactorily ascertained, as one nest contained three, and another four, eggs of a pale brown or sandy hue, thickly sprinkled over with reddish brown spots and dashes."

The eggs in shape and size closely approximate to those of our domestic Indian Turkey, but are as a whole slightly larger, and, considering how much heavier the latter bird is than the former, this difference in the egg is remarkable. The shell is fine and compact, showing none of the pores so conspicuous on Peafowls' eggs; but they have only a faint gloss, and contrast in this respect strongly with the eggs that our domesticated Turkeys here commonly lay. The shape is a long oval, a good deal compressed towards the small end. The ground color is a pale *café au lait* or buffy white, and they are thickly and coarsely freckled all over, but most thickly over the central portion of the egg, with deep reddish brown, which has a sort of raw sienna tint. The markings are sometimes nearly wanting towards the small end, and are always, I think, least conspicuous and least dense at the two ends. Sometimes the whole egg is densely mottled all over with the reddish brown; sometimes again the markings are almost wholly wanting; and in some they are gathered into large and comparatively bold blotches.

In length the eggs vary from 2·41 to 2·69, and in width from 1·7 to 1·89; but the average of thirty-six eggs is 2·55 by 1·78.

805.—*Ceriornis satyra, Edw.*

Of the nidification of the Crimson-breasted Horned Pheasant I know unfortunately but little. It is not, as Jerdon fancied, confined to Nepal, Sikhim, and Bhootan; it is common in Kumaon, where I have never seen the next species, and even as far west as Mussoorie is often brought in by native sportsmen.

It breeds high up, at elevations of from 9,000 to 12,000 feet, in the forests that lie below the snow, or in dense patches of the hill bamboo; but I have never found the eggs myself, and my account is based on the statement of natives, from whom I received the only eggs I possess, which latter were taken in Kumaon in May.

The eggs are much like large hens' eggs, perhaps rather more elongated and more compressed towards the small end. The shell is only moderately stout, and the surface is conspicuously pitted over with pores. In color they are nearly white, having only a faint *café au lait* color, and they are here and there very slightly freckled with a pale dull lilac. One egg is somewhat darker and entirely wants these markings. They have very little gloss. In length they vary from 2·54 to 2·62, and in breadth from 1·8 to 1·84.

Further details of the nidification of this beautiful bird are much wanted.

806.—*Ceriornis melanocephala, Gray.*

The only eggs of the Black-headed Horned Pheasant that I have yet seen are six sent to me by Captain Unwin from Hazara, and which were taken on the 25th May 1869 by Captain Lautour, who communicated to him the following note:—

"I was shooting on a range of hills from 8,000 to 11,000 feet high. The Argus in parts very plentiful, the hills covered with pine forests, and the Argus I used to find about one-fourth of the height of the hill from the top, and they appeared to affect the vicinity and edges of snow nullahs and landslips where there was a fair quantity of undergrowth and where there were plenty of rocks.

"At the time of finding the nest I was on the look-out for Pheasants, but the ground being rather stiff I had just given up my gun to the shikaree when the bird got up almost at my feet. I was going through a pine forest, and had reached a place where an avalanche or landslip had carried away all the pine trees and in their place small bushes and shrubs resembling the hazel had sprung up. I was descending into this when the bird got up, as I said before, almost at my feet. The nest was on the ground, and was very roughly formed of grass, small sticks, and a very few feathers; it was very carelessly built. More I did not observe, as the bird having gone down close I wanted to shoot it.

"I did not succeed in doing this, but from the close view I had of it and the attention I have since paid to all our Pheasants, I have no doubt the bird was a hen Argus."

Indian sportsmen always miscall this species and the previous one the Argus. I may add that there is no earthly doubt of the correctness of the identification, as there is absolutely no other bird in the Western Himalayas that *could* have laid these eggs.

The eggs are more or less elongated ovals, considerably compressed towards the small end. They are, as a whole, of very much the same length, but a good deal slenderer than the eggs of the *Moonal.* The shell is fine, but almost absolutely devoid of gloss. Looked at from a little distance, they appear to be of an uniform color and devoid of markings, and seem to vary from a pale *café au lait* to a dull reddish buff; looked into closely they appear to have a somewhat lighter ground color, excessively finely and minutely freckled and spotted with a somewhat darker shade. They are the least glossy of all the true game-birds' eggs that I know, and in shape and texture though not in tint remind one not a little of those of the King Curlew and White Ibis and other birds of that family.

In length they vary from 2·4 to 2·55, and in breadth from 1·68 to 1·72; but the average of the six eggs is 2·51 by 1·7.

808.—*Pucrasia macrolopha, Less.*

The Koklass, or, as some sportsmen call it, the Pukras, breeds throughout the Himalayas from Cashmere to Bhootan in all well-wooded localities, at elevations of from 6,000 to 9,000 feet. The bird itself may be shot at any elevation from 3,000 to 11,000 feet, but it only nests, according to my experience, between the limits I have indicated. The breeding season lasts from the middle of April until the middle of June, according to locality and season, but the majority lay, in normal seasons, during the first half of May.

Little or no nest is made; a circular depression is scratched in the forest, in a thick shelter of undergrowth or under some huge root or overhanging rock, and in this unlined, or but sparely lined with leaves, moss, or dry grass, or all three, the eggs, from five to nine in number, are laid.

Mr. Wilson, quoted by Dr. Jerdon, remarked, some twenty years ago, that "the female lays seven eggs nearly resembling those of the Moonal in color. They are hatched about the middle or end of May. She makes her nest under the shelter of an overhanging tuft of grass, or in a corner at the foot of a tree, and sometimes in the hollow of a decayed trunk."

Now writing to me from Gurhwall, he says:—

"The Koklass breeds at elevations of from 5,000 to 10,000 or 11,000 feet in coppices and forests with some underwood. The nest is a hole scraped in the ground and always sheltered under a tuft of grass or thick bush or overhanging stone, and it is sometimes made in the hollow at the foot of a big tree or old trunk. As a rule, the number of eggs seems to be nine. It begins to lay early in May, but some not till the end of the month. The eggs are sharp-pointed, say about 2·25 long by 1·5 wide, yellowish or dirty-white, powdered and spotted and blotched with chocolate. Both birds are generally found with the young brood. The male chicks of this and the Kalij get their proper plumage the first year. By the middle of September they are pretty well grown."

The eggs are oval, more or less pointed towards the small end, and vary a good deal in size and shape, as in the case of the Peafowl, some being much broader and others more elongated ovals. None that I have seen have been at all of the ovoido-conoidal shape of the *Francolins* and the Common Pheasant (*P. colchicus*). The shape is more that of the true Partridge, *Galloperdix* and *Gallophasis*. The ground color is a rich pale buff, and the eggs are, some densely and thickly speckled and spotted, and others boldly but thinly blotched and spotted, with deep brownish red, which is dullest in the speckled, and brightest and deepest in the blotched, varieties.

The eggs of these two types vary more in appearance than might perhaps be supposed from the above description. One egg will have the whole ground as thickly speckled over as possible with minute dots, not one of them much bigger than a pin's point, and so closely set that a pin's head could nowhere be placed between them; while another egg will have at most a dozen bold blotches, and three or four times that number of good-sized spots, leaving comparatively large spaces of ground color utterly unspotted. It is impossible to conceive a richer brownish red than that displayed in some of these blotches, and eggs of this species of the boldly-colored type are, I think, the handsomest of all our Indian game-birds' eggs. Taken as a body, they are very like miniature Moonal eggs, and they also remind one much of those of the European Black Grouse.

The eggs vary very much in size, *viz.*, from 1·85 to 2·29 in length and from 1·39 to 1·57 in breadth; but the average of fifty eggs is 2·08 by 1·47.

809.—*Phasianus Wallichii, Hardw.*

The Cheer breeds throughout the lower ranges of the Himalayas, at elevations of from 4,000 to 7,000 or 8,000 feet. They also breed from April to June, most of the eggs being laid during May, early or late in the month according as the season is a cold or warm one. Personally I have only taken three nests of this species altogether, so that I cannot generalize safely, but my impression, derived from my limited experience, is that they always nest near or about the foot of some very precipitous hill-side, what the natives call "*Dang*" cliffs, not absolutely vertical but still the next thing to it, broken up into ledges and steps, and studded with down-trailing bushes, tufts of grass, and, growing here and there out of some larger cleft or wider ledge, a few stunted trees.

In 1853 I was living at a small house behind the "Camel's Back" at Mussoorie, a house which was afterwards converted into a dispensary. About a thousand feet below and perhaps half a mile from this is a precipice, such as I have described, and at the foot of this, in the midst of a tuft of grass, I found on the 3rd May a nest of the Cheer containing two eggs. It was a mere depression, some 14 inches in diameter and 3 inches in depth in the centre, obviously scratched by the birds and strewed, rather than lined, with a few scraps of grass. Eleven more eggs were laid, one daily, and then the hen began to sit. One egg was addled; the rest were hatched somewhere about the beginning of June, but I kept no note of the date. The whole family then took up its residence in the precipice, and there remained until the middle of October, when, the young being nearly full grown, I commenced shooting them and shot a brace once or twice a week, until there were only two or three young-ones left. At 11 A. M. they were always in the upper part of the precipice; my dogs used to be put in and would rummage along the ledges and turn them out, when, after a few strong strokes outwards from the face of the cliff, they would all but close their wings and come down past me (I always stood in the same place on a knoll at the foot of the cliff where I was safe from stones) like lightning. I remember well missing every single shot the first day, but the next time I got a brace and after that I never went home without one or two, and, strange to say, my weekly and sometimes bi-weekly visits never had the effect of driving them away, and what is more, in October 1860, when I again visited the place, I found my friends in their old locality, and got three brace then and there.

I found another nest with several eggs late in May, in a very similar situation, on Nagtiber, at, I suppose, an elevation of about 6,000 feet, and a third, containing four eggs, which I took very early in May, a few miles from Juggutsook in the upper valley of the Beas. This too was similarly situated.

Mr. Wilson, quoted by Dr. Jerdon, tells us that "the female makes her nest in the grass or amongst low bushes, and lays from nine to fourteen eggs of a dull white, and rather small for so large a bird. They are hatched about the end of May or beginning of June. Both male and female keep with the young brood and seem very solicitous for their welfare."

The eggs are, as remarked by "Mountaineer," very small for the size of the bird. They are of a very pale stone color or a dingy, slightly *café au lait* tinted-white. They are almost devoid of markings, but towards one or other end many specimens exhibit small somewhat pale brownish red specks and spots ; and one or two that I have seen have had a good number of very minute specks of the same color scattered about the surface. They altogether want the warm *café au lait* tint of those of the Moonal, Koklass, and the Kalij, and laid beside these eggs they seem to have a slightly greenish tint. In shape they resemble an ordinary hen's egg, and are not at all, as might have been expected, like those of *P. colchicus*. The shell has a slight gloss, but it exhibits throughout the minute pits or pores so characteristic of rasorial eggs, in a much less degree no doubt than those of the Peacock and others, but in a greater degree than those of the Koklass.

They appear very uniform in size; at any rate the specimens I have, only vary from 2·05 to 2·22 in length, and from 1·47 to 1·56 in breadth.

809 *ter.*—*Euplocamus lineatus*, *Lath.*

Mr. Eugene Oates has sent me the following note in regard to the nidification of the Lineated Pheasant in the country between Thayetmyo and Tonghoo in Upper Burma, (British) :—

"The breeding season begins about the 1st March, and by the end of the month all the hens have commenced laying. It is during this month only that the male makes that curious noise with his wings which seems peculiar to the Kalij group. It may be imitated very fairly by holding a pocket handkerchief by two opposite corners and extending the arms with a jerk. This noise, made only by the male, is undoubtedly a challenge to other cocks. I have frequently hidden myself near a bird thus engaged, and on two occasions I shot cock birds running with great excitement towards the sound.

"The female makes no nest but chooses a hollow on a bank-side, generally at the foot of a bamboo clump. The dead leaves, which have accumulated to the depth of three or four inches, are hollowed out by the bird, not purposely I think but merely by the pressure of the bird's body. The first nest I found in 1871 contained six fresh eggs. This was on the 24th March. The second nest, found on the 8th April, contained seven eggs slightly incubated. The extreme dimensions of fifteen eggs were—

Length	1·75 to 1·95.
Breadth	1·4 „ 1·5.

"A third nest, found on the 15th April 1873, contained seven eggs hard-set.* The color is a rich cream, with numerous small dots of chalky white. The chickens, as soon as they are hatched, are very strong on their legs, and run with great speed. I was fortunate enough to capture portions of four broods. It is astonishing in what a short time the little birds make themselves invisible. It is difficult to secure more than two out of one batch. It is a case of pouncing on them at once or losing them. The mother is a great coward, running away at the slightest alarm, and thus contrasting very unfavorably with the Jungle Fowl, which keeps running round and round the intruder with great anxiety till her young ones are in safety."

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* Dimensions of three—
2·00 by 1·44.
1·99 „ 1·47.
1·98 „ 1·42.

One egg sent me by Mr. Oates is of the ordinary hen's egg type. It has a rather fine shell (the pores, however, being very numerous), but it has scarcely any perceptible gloss. It has no markings or spottings, but is of an uniform, rather rich, *café au lait* color. Doubtless, as is the case with all these birds, some eggs will be much more glossy, and others again will be paler and yellower.

This egg measures 1·99 by 1·48.

810.—*Gallophasis albocristatus, Vig.*

The Common Kalij breeds everywhere in the Himalayas south of the first Snowy Ranges, (and occasionally in the Dhoons and Terais that fringe their bases) from the borders of Afghanistan to Nepal.

I have found eggs in the Dhoon as early as the 4th April, and at Simla as late as the 20th June. They breed at all elevations from the level of the Terai, (where it may be 1,200 feet above the sea-level,) up to fully 8,000 feet.

They are not very particular as to choice of locality, but more or less inhabited and thinly forest-clad tracts, with pretty dense undergrowth, are usually chosen; little, densely bushed watercourses on the sides of hills moderately-thickly or somewhat-thinly covered with oak and rhododendron forest, and in the neighbourhood of fields, being much affected.

The Common Kalij hardly forms a regular nest. It gets together a pad, sometimes rather massive, sometimes very slight, of fine grass and coarse moss-roots, mingled with a little grass or a few sprigs of moss, and in a slight depression in the centre of this it lays its egg. One which I measured *in situ* in May 1871, in the valley of the Sutlej just below Kotegurh, was circular, 11·5 in diameter and 4 inches in thickness outside, with a central depression 6 inches wide and nearly 2 inches in depth in the centre. Others again have been mere linings to a slight hollow in the ground, either natural or scratched by the birds; I have seen a great many nests of this species, and they were generally very scanty. The nest is usually well concealed under tufts of fern (they are very fond of fern-clad hill sides), grass, or "ringal" as the natives call the slender dwarf hill bamboos.

I have never found more than nine eggs myself, but I have had as many as thirteen brought me by natives, said to have been found in one nest. As a rule, I do not think they lay more than nine eggs, and certainly one rarely sees more than eight or nine young birds with a pair of old ones.

Dr. Jerdon says that "the Kalij lays from nine to fourteen eggs, very similar in size and color to those of the domestic hen. They are hatched about the end of May."

From Curhwal Mr. Frederic Wilson, our well-known "Mountaineer," writes to me "The Kalij Pheasant (*murghi* or *kookera* of the Paharis) is found from the foot of the hills, or rather from the Sewalic Range, to the Snows and consequently breeds at all elevations up to 9,000 ft.; in a few localities still higher; I lately found a nest above the village of Sookee in the Bhagiruttee Valley which must have been at 9,500 ft. In the Dhoon, at the foot of the hills and in the lower valleys the Kalij begins to lay in April. In the higher ranges it lays in May, and some birds not till the beginning or middle of June. The nest, if it can be called such, is generally in a coppice where there is plenty of underwood, and under an overhanging stone, or thick low bush or tuft of grass. It is merely a hole scraped in the ground. The eggs are nine to fourteen in number, very like those of some domestic fowls, a yellowish or buffy white. One I have before me is 2 inches long and 1·5 wide. Some are rounder, one from another nest is 2·0 long and 1·62 wide. Both parent birds are generally found with the young brood. Occasionally very late broods would lead one to infer, either that the Kalij sometimes has two broods in the year or that when a nest is destroyed they commence the business of incubation over again."

Captain Hutton remarks: "This species, the Kalij of the hill-men, is found in the hills at all seasons, and is common at every elevation up to the Snows. It breeds in May and June. In the latter month I found a nest, by the side of a small watercourse, composed merely of a few dead leaves and some dry grasses, which had probably been accumulated by the wind and tempted the bird to deposit her eggs upon them. The spot was concealed by large overhanging ferns, and contained the shells of eight eggs of a sullied or faint brownish-white, like some hen's eggs; the tops of all were neatly cut off as if by a knife, showing that the young ones had escaped, and singular enough I had the day before captured the whole brood."

Captain Cock says: "The Common Kalij breeds in May and June, and lays its egg as a rule on the ground under a rock or bush; but I have taken a nest on a large low bough of a tree, in a hollow, on the upper side of which the eggs were placed. The hen will allow herself to be caught on her nest at times. Lays eight eggs of a buff color."

The eggs are oval, moderately elongated, a good deal pointed towards one end, perhaps, typically, less so than those of the Grey Partridge, more so than those of the Peahen, but belonging to that type, and not to that of the *Francolin's* or English Pheasant's. The eggs are always glossy, sometimes highly so, and the surface is generally very finely and closely pitted with minute pores like those of the Peacock's egg on a diminutive scale. In some specimens these are pretty conspicuous, but in the majority they are only noticeable on close inspection, and in some they appear almost entirely wanting. The eggs vary in color from a very pale creamy or buffy white to a rich reddish buff, even richer and redder than any specimens of the Peafowl's eggs that I have yet seen; though such may doubtless occur, I have not yet seen a specimen freckled or mottled as Peafowl's eggs occasionally are, though I have seen some pretty thickly speckled with minute white spots.

In length the eggs vary from 1·85 to 2·03, and in breadth from 1·25 to 1·52; but the average of fifty eggs is 1·94 by 1·44.

811.—*Gallophasis melanotus, Blyth.*

I have never yet taken a nest of the Sikhim or Black-backed Kalij.

A clever writer in the FIELD, who rejoices in the cognomen of "Ornithognomon," tells us that "the eggs are white" (which I should like to verify), about the size of those of the Jungle Fowl, but rather longer in shape. They lay throughout the hot-weather, and bring forth their broods in April, May, and June."

Dr. Jerdon states that "its eggs are occasionally found by the coolies when weeding the tea-gardens (near Darjeeling) in June and July, and are usually, I am told, five to eight in number."

A nest obtained near Darjeeling in July contained six eggs of the usual Kalij type, that is to say, broad regular ovals, but little compressed towards the small end, of a decided *café au lait* tinge. The shell, strong and hard; the surface, everywhere covered with minute pits, but withal fairly glossy. I have no doubt but that this is the normal type of this bird's eggs, and that those obtained by "Ornithognomon" were abnormally pale eggs, such as all game-birds occasionally lay.

The eggs varied in length from 1·89 to 1·95, and in breadth from 1·46 to 1·49.

812.—*Gallus ferrugineus, Gmel.*

The Common Jungle Fowl is, as its name imports, a true denizen of the jungle, and most especially of jungle in the vicinity of scattered cultivation, at or near the bases of hills, which keep it comparatively well watered throughout the year.

It breeds within our limits in suitable localities throughout Burmah, Assam, Bengal, Oudh, the North-West Provinces, and the eastern portion of the Punjab, although in this latter locality it is much rarer than in the other provinces above named. In the Central Provinces it is only found in the northern and eastern portions. It is common in the Kymore Range and extends on to the Maikle or Ammurkuntuk Ranges. It is the only Jungle Fowl in Sumbulpoor, Raipoor, Balaghât, Mandlah, and Jubbulpoor. I have been unable to ascertain which Jungle Fowl occurs in the hills about Seoni, Kooraiie, Deoghur and Chundwara, but I suspect that the Kunhun Valley here divides the two species. In Bustar and Puchmurree both it and the next species meet. In Madras it occurs on the Eastern Ghâts in Ganjam and Vizigapatam; in fact, as far south as the Godavery.

It is not confined to the plains; in summer at any rate it is to be found at elevations of from 3,000 to 4,000 feet in the hills, about whose bases it is most commonly found in winter. It breeds both in the low country and in the hills, laying, according to my experience, from April to June.

The hen makes her nest in any dense thicket, bamboo clumps, it is said, by preference, though I have not noticed this to be the case, composed of dry leaves, grass, and stems of soft herbaceous plants. Sometimes the nest is large and comfortable, sometimes it looks as if the bird had made no nest, and merely laid on a heap of dry leaves that it found handy, hollowing a receptacle for the eggs by the pressure of its body. Sometimes again the bird has clearly scraped a hollow in which to place the nest, and sometimes it has scraped up the earth all round, so as to make a sort of rim to the nest and keep the materials firm.

Many years ago, shooting in May for a month along the southern side chiefly, of the Sewaliks, my people and dogs between them used to find me a nest almost every day, and once we found six within a circle of 200 yards near the Bhinj-ka-khol. A large *lota* of water was carried, and one or two eggs out of every batch were tested to see if they would lie flat at the bottom, stand on end, or float; of course we took only the former, and these I used to eat boiled, roast, and in omelettes, until I got perfectly sick of them. In those days, (I say it with pain and humiliation,) the only use I ever put eggs to was to eat them, and in this particular case I was punished, for since I took to collecting eggs fate has so willed it that I have never seen a single nest, and have only quite recently succeeded in obtaining a very few from different localities. Well, in all the many nests I have seen I never found more than nine eggs, and as well as I can remember five or six were the usual complement even where the eggs were hard-set and floated.

Captain Hutton says: "The Common Jungle Fowl is abundant in some parts of the Dhoon, and in summer ascends the outer hills to 5,000 feet elevation. It lays its eggs on the ground with little preparation of nest, contenting itself with scraping together a few dry leaves and grass; the eggs being from four to six generally, though often more, of a dull white and very similar to those of Common Bantam Fowls, with which it will readily breed if domesticated from the egg.

"I have often reared the chicks under a domestic hen and turned them loose, but after staying about the house for several days they always eventually betook themselves to the jungles and disappeared. If kept confined with other Fowls, however, they readily interbreed, and the broods will then remain quiet under domestication, and always exhibit both in plumage and manner much more of the wild than of the tame stock, preferring at night to roost on the branches of trees. Mr. Blyth has remarked that his cross-breed eggs never produced chicks, but I have never found any difficulty in this respect. The crowing of the cock birds is very shrill and like that of the Frizzled Bantams. In the wild state it is monogamous."

Dr. Jerdon states that "the hen breeds from January to July, according to the locality, laying eight to twelve eggs, of a creamy white color, often under a bamboo clump or in some dense thicket, occasionally scraping a few leaves or a little dried grass together to form a nest."

In the FIELD "Ornithognomon" writes: "The period of incubation varies, according to locality, but is generally at the beginning of the rains, *i. e.*, June. I have seen eggs, however, in March. She selects for the purpose of nidification some secret thicket in the most retired and dense part of the jungle, scraping together a few leaves on the ground by way of nest. She remains as part of the cock's seraglio until some seven to ten or a dozen eggs have been deposited in the above spot, to which she stealthily repairs every day, and finally quits her party and retires alone and unseen to perform the duties of incubation. The chicks are hatched as usual in about twenty days, and run about, following the mother, as soon as they have emerged from the egg-shell; and she leads them about, teaching them how to find their own sustenance, till they are big enough to shift for themselves, by which time the young cocks, finding that they cannot in honor come within a few yards of each other without a battle, separate, each one taking some of his sisters with him. These particulars I have gathered from native informants; but I can add from my own experience that either the season of incubation is uncertain, or that the hens lay in the cold-season with no more ulterior views than the domestic birds, for both in February and March I have heard them emit that peculiar cackle *tuk-tuk-tuk-tuk-tukauk!* by which every one knows a hen in a farmyard proclaims to the good housewife a fresh acquisition to her larder."

A good deal of this is purely "native." In the *first* place, the nests are not really generally so very carefully hidden; they are in thickets no doubt, but fully half of them are so far open that no one given to bird-nesting could possibly pass them. In the *second*, go near the nest when you like,—morning, noon, or evening,—be there one egg or six in the nest, your dogs are certain to put the hen up quite close. In the *third* place, how each young cock is to go away taking *some* of his sisters with him I do not know. Certainly to judge from the young birds one kills in October and November, (when they are fat as butter and most delicious,) fully as many young cocks as hens are reared. Lastly, I am quite certain that they are not always polygamous. I do not agree with Hutton that they are always monogamous, because I have constantly found several hens in company with a single cock, but I have also repeatedly shot pairs without finding a single other hen in the neighbourhood, and if you have good dogs (and you can do nothing in jungle with either these or Pheasants *without* dogs) you are sure to *see* and *hear*, even if you get no shot at them, all the birds there are.

From Upper Pegu, where they are quite as common in the hills as in the plains, Mr. Oates sent me eggs taken by him on the 20th March and 25th May.

He says: "In Pegu this species appears to breed throughout the first six months of the year, but more frequently in April, May and June. Nests at all elevations from 100 to 2,000 feet above sea level."

The eggs vary a good deal in size and shape, but typically they are miniature hens' eggs; considerably elongated varieties are, however, common. The shell is, as a rule, very fine and smooth, and has a tolerable gloss; but specimens occur in which the pores are much more marked than usual, the shell coarser and rougher, and the gloss very faint. As to color they are normally a pale yellowish *café au lait* color, but occasionally a redder and deeper-colored egg is met with.

In length my few eggs vary from 1·7 to 2·03, and in breadth from 1·3 to 1·42; but the average of seven is 1·8 by 1·36.

812 *bis.—Gallus Lafayettii, Less.*

Of the Ceylon Jungle Fowl Mr. Layard tells us: "The hen selects a decaying stump or thick bush for a nesting place, and lays from six to twelve eggs of a rich cream color, finely mottled with reddish brown spots. Axis, one inch nine lines; diameter, one inch four lines. The young when just hatched resemble young chickens, and the old mother leads them to decaying prostrate trees and scratches for white ants, which they eagerly devour. They are hatched in June."

Mr. W. V. Legge, writing to me from Ceylon, says: "Like *Galloperdix zeylonensis* the Ceylon Jungle Fowl would appear to nest throughout a considerable portion of the year or else during the north-east monsoon at different times, the same pair rearing more than one brood and thus continuing to lay until late into each season; the latter may no doubt be the correct hypothesis. The facts of the case are these however; young broods may be seen about with the parents in the south-west of the island as early as February. I have seen the same in the south-east at the beginning of July, and have taken eggs in the southern mountains on the 8th August.

"The nest is situated in the jungle or forest, under the shelter of a tree, log, or bush, and consists of a hole or slight hollow scraped in the ground and a few leaves for lining. I have found it placed close to the trunk of a forest tree between two projecting surface roots. The eggs are from two to four in number and vary in size and depth of ground color, and also in the quantity of the scanty markings which characterise them.

"Four specimens varied from 1·62 to 1·77 in length, and from 1·26 to 1·35 in breadth. Two taken from the same nest are reddish buff with minute calcareous specks on the whole surface. The other two are stone white, finely stippled all over with minute points of reddish grey, the former with a few faint small spots of the same hue at the obtuse end, the latter spotted more numerously at the same end with brownish red.

"The young brood continue with the mother for about two months, by which time they are three parts full grown. They seem to evince considerable attachment to the parent, as I once shot a hen in the Eastern Province that was feeding by the side of a jungle track with three grown-up young ones, which evinced considerable reluctance to leave her, running to and fro for a sufficient time to have allowed me to have shot them all.

"At times when the 'nilloo' (*Thunbergia fragrans*), a plant whose seed the Jungle Fowl greatly affects, is in flower, great numbers resort to the jungles of the upper hills of the Nuvara Elia District. In 1868, a friend informs me, they bred on the Haughton Plains, not far from the sanatarium, in large numbers. In April the young broods were about with the hens, and when disturbed either took refuge in the undergrowth or flew off in the trees. My friend informs me that they were so numerous that he could have knocked over dozens with a stick as they alighted on the branches of the low jungle."

813.—*Gallus Sonneratii, Tem.*

The Grey Jungle Fowl is found and breeds throughout the Peninsula of India in suitable localities, extending northwards in the Central Provinces to Puchmurree, being the only Jungle Fowl of the Satpooras, and on the west reaching as far north as Mount Aboo and Serohi. It does not, that I could discover, extend further up the Aravallis than this latter locality. It ascends the Nilghiris to 5,000 feet, and Aboo as high as the Oonja or Jewai Plateaux, or say about 4,800 feet. Two eggs were taken in May when I was at Aboo, but as to the breeding season and other particulars I must let my correspondents speak.

Writing from Kotagherry in the Nilghiris, Miss Cockburn remarks: "The hen forms her nest in woods on the ground, gathering a few dry leaves and sticks about her. The number of eggs found in a nest is from seven to thirteen. They are of a dirty white or buff color. The hen, when leaving the nest to seek food, generally covers the eggs with dry leaves, no doubt hoping by so doing to screen them from harm. These nests are found during March and April. I have on two or three occasions set Jungle Fowls' eggs under domestic hens and reared the young. It was amusing to see how soon they showed signs of their wild nature. When about a fortnight or three weeks old, their wing feathers were so long as to enable them to fly up into trees at any moment, while their foster-mother stood below wondering at an accomplishment she never witnessed in her own progeny. At night they much preferred roosting on some tree in the garden, and when a few months old they invariably went off to the woods."

On the other hand, Mr. Davison, referring more particularly to his experience at Neddivattam on the other side of Ootacamund, says: "The Grey Jungle Fowl breeds in October, November, and December. There never is any nest to speak of, the eggs being merely laid on some dry leaves, under clumps of trees, or a bush far in the jungle. The number of eggs in a nest apparently varies from six to ten."

Dr. Jerdon again tells us: "The hen lays from February to May, generally laying from seven to ten eggs of a pinky cream color, under a bamboo clump."

Lastly, Mr. Wait, writing from Conoor, informs me that "the Grey Jungle Fowl also breeds here. The egg is oval, of a deep buff color, and measures 1·75 by 1·125.

"They lay in May and June."

According to this, these irregular birds lay in different parts of the Nilghiris from October to June,—a fact which requires further verification. It must however be borne in mind that different portions of the Nilghiris are more and less respectively under the influence of the north-east and south-west monsoons, and that this may materially affect the breeding season of this species as it does of the Herons and other Waterbirds.

Writing from Aboo, Dr. King noted that "the eggs were found here from the middle of April to the end of May. The nest was described by the Bheels and shikarees (for I never went down to take one myself) as similar to that of the Spur Fowl (*G. spadiceus*), but larger, and like it placed in clumps of bamboo or other thick undergrowth."

The eggs vary much in size, shape, and tint, but there are two extreme forms between which all others are intermediate links,—the one is a long oval, with a fine compact hen's egg-like shell, of a very pale creamy white color, and with only a faint gloss; the other has a comparatively coarse shell, conspicuously pitted all over with pores after the fashion of Guinea Fowls' or Peahens', but yet glossy, is of a broad oval shape, slightly pointed towards the smaller end, and of a rich, almost deep, *café au lait*.

Between these two types, which no one but an oologist would at first sight believe to belong to the same species, every intermediate form, some of them thickly speckled in parts with brownish red, are met with.

The eggs vary from 1·7 to 2·05 in length, and from 1·35 to 1·5 in breadth; but the average of twelve eggs measured is 1·84 by 1·42.

814.—*Galloperdix spadiceus, Gmel.*

The distribution of the Red Spur Fowl is as yet very imperfectly understood, and it inosculates so remarkably with that of the Painted Spur Fowl as to be at present almost inexplicable. As a rule, the two are never found together, but single birds of the one species may be found straggling within the domains of the other. Thus the present species is *the* bird of the Nilghiris, but single specimens of *lunulatus* have from time to time been procured there. Again, it is *lunulatus* that is so abundant in Raipoor, Bhundara, the Tributary Mehals, and Cuttack, but single stragglers of *spadiceus* have been sent me from these localities.

The Red Spur Fowl is abundant on the Nilghiris up to an elevation of 5,000 feet, and may be met with up to their very summits. It is *the* Spur Fowl of Wynaad, the Malabar Coast, and Western Ghâts, up to Mount Aboo and the Sirohee jungles. Jerdon says it is also the Spur Fowl of the eastern parts of Central India, in the high land between Nagpoor and the Nerbudda, and in the Vindhian Range. It is found also, he says, in the Rajmehal and Khurukpoor Hills. I found it north of the Ganges at Tickroogunj on the extreme limits of the Purneah District (associated *here* with *G. ferrugineus,* as it is at Aboo with *G. Sonneratii*) and in the Nepal and Goruckpoor Terai.

Wherever it is found, it is, I believe, a permanent resident, and there breeds. It lays, according to locality, from the end of February to the middle of June, and perhaps again in October and November, although of this I am not sure. It makes a slight nest, on the ground, of dry leaves and grass, often in a hollow scratched for the purpose, always in more or less dense undergrowth, and in many parts of the country, I am told (though this is not my experience), almost exclusively in bamboo thickets. It is, I judge, monogamous ; certainly both cock and hen are usually to be found in the vicinity of the nest and in company with the young.

It lays from four to seven eggs, I should say, but others have found as many as ten. The hen seems to sit unusually close; at any rate I have twice known one captured by the hand by a native on the nest.

"On the Nilghiris," says Davison, "the Spur Fowl breeds in the same localities as the Grey Jungle Fowl and makes the same slight nest. The breeding season, however, is in May and June. I have rarely found more than five eggs in a nest."

From Kotagherry Miss Cockburn remarks: "They form their nest in woods on the ground among dry leaves, and generally lay from six to ten eggs of a dingy white color, which are to be found in the months of February, March, and April."

From Aboo Dr. King writes to me: "This species is common at Aboo in the valleys ranging as high as 4,000 feet, but is most plentiful from about 1,500 to 3,000 feet above the sea. It prefers dense jungle about nullahs, where there is a thick undergrowth, and especially where there is much bamboo.

"I never took the nest myself, but its eggs were brought me during the early part of May, and my shikarees and the Bheels employed said that the nests were flat and shallow, composed of dry bamboo leaves and placed under, or even in the middle of, clumps of bamboo, in the deeper valleys."

The eggs are typically the same shape as a hen's, but much elongated and cylindrical Sand-Grouse-shaped varieties are common. All that I have seen have been entirely spotless, sometimes almost glossless, at others fairly glossy, and varying in color from a warm pinkish buff to a delicate fawn, a pale *café au lait,* or even creamy white.

In length they vary from 1·55 to 1·75, and in breadth from 1·13 to 1·3; but the average of twenty eggs is 1·65 by 1·21.

815.—*Galloperdix lunulatus, Valenc.*

The Painted Spur Fowl breeds in suitable localities in the eastern two-thirds of the Peninsula of India south of the Nilghiris, and thence up the

Eastern Ghâts and in all high broken country directly connected with these into Cuttack, the Tributary Mehals, Raipoor, Bhundara, and, Jerdon says, the Mirzapoor and Monghyr Hills, though this latter requires confirmation. On the other hand, at Gumsur in the north of the Ganjam District, Jerdon tells us that he only saw *spadiceus*. Again, immediately south of the Nilghiris it extends at any rate as far west as Palghât, as I have received several specimens thence. Altogether, as I said when speaking of the Red Spur Fowl, the areas of distribution of these two species are so marvellously interlaced that I cannot at present pretend to disentangle them.

Neither species are birds of the alluvial plains, and though a few may stray into these, their natural homes are jungle-clad hills, especially rocky hills, and their immediate neighbourhoods.

I have never seen a nest.

From Raipoor Mr. F. R. Blewitt writes: "The Painted Spur Fowl is to be met with in numbers in certain localities in the hill ranges in the Bhundara and Raipoor District. Eastward it has been found in the low hills dividing the Pithora Native State from the Sumbulpoor District. In this latter district itself it has been nowhere observed by me, but 812,—*Gallus ferrugineus*,—is common in the south-eastern section in the hill ranges beyond the Mahanuddy.

"The present species is especially partial to low rocky hills covered with impenetrable thicket; it also affects, though more rarely, bamboo jungle. The bird is either met with singly or in pairs; occasionally three or four congregate together. In the early morning and evening the birds descend to the more open spaces at the base of the hills to feed, and from an elevated position may be seen very busy running here and there feeding. During the day they retire to the inaccessible thickets above. Very wary is the Painted Spur Fowl. On the slightest alarm it will run quickly up-hill to reach the shelter of its favorite haunts; once there it is impossible to flush it again. In the more open jungle they are easily flushed and, though the flight is swift, offer an easy shot. The call is a peculiar loud *chur, chur, chur,* rapidly repeated, anything but 'fowl-like.'

"It breeds certainly from March to May, making simply a slight excavation in the ground for the eggs, under the shelter of a boulder or rock in a thicket. Some time in April 1871, from such a nest, made at the base of a large boulder in dense jungle, the egg-shells were taken from which the chicks had just escaped; again, in the same month, under the ledge of a rock in thick underwood in a slight hollow in the earth, two fresh eggs were found.

"Apparently five is the maximum number of the eggs. At least during two seasons of the many broods met with, no single brood of chicks exceeded this number.

"The parent birds assiduously care for their young, and when disturbed exhibit great anxiety for their safety. When closely pursued, the old birds endeavour by many artifices to draw the attention of the intruders from the spot where the chicks lie concealed, and invariably on the cry of a chick wounded or captured, the parent birds daringly return to the rescue, often to within a dozen yards or so of the sportsman."

An egg of this species sent me from Raipoor by Mr. Blewitt has a particularly fine satiny shell. It is a moderately broad regular oval, and is of an uniform rich *café au lait* color. This egg is considerably smaller than the generality of the eggs of *G. spadiceus*, but I have two eggs of this latter species as nearly as possible of the same size. It measures 1·56 by 1·15.

815 *bis.*—*Galloperdix zeylonensis, Gmel.*

Mr. W. V. Legge, writing from Ceylon, informs me that the Ceylon Spur Fowl breeds there during the south-west monsoon, and remarks as follows :—

"The nesting season of *G. zeylonensis* would seem to extend over a considerable period, as I have had fledged young brought me at the latter end of May, and have taken the eggs myself on the 7th July in the same district, the Southern Province.

" The nest is situated in the forest or in thick jungle, under the shelter of a rock or near the projecting root of a large tree. It is merely a slight hollow scraped in the ground, with one or two dead leaves in the bottom to serve as lining. I am unable to state what the average number of eggs in the clutch is, as so little is known of the nesting of this bird,—the eggs in my own collection being the only specimens I believe in the possession of any collector; they were taken from the same nest and are two in number. The natives inform me that they lay four very often, and as I had four young-ones brought me once with the old bird, I dare say their information is correct. They are oval in form and rather large in diameter for their length. My two specimens measured respectively—

(1).—Axis, 1·42 inch ; Diameter, 1·12.
(2).— „ 1·43 „ „ 1·12.

" They are of an uniform cream color, one of them having small white calcareous polished specks all over it similar to those seen on the eggs of the Cochin China fowls at times. The old bird was sitting on the nest at the time I found it and flew off with great swiftness ; this I attribute, however, to my having come on the nest suddenly, otherwise she would doubtless, as most birds which nest on the ground do in similar cases, have left it stealthily."

816.—*Tetraogallus himalayensis, Gray.*

I know but little of the nidification of the Himalayan Snow Cock.

In the Upper Sutlej Valley, Lahul, and Spiti this species lays in June, at elevations of from 12,000 to 17,000 feet. The eggs, according to native collectors, are normally five in number. In shape they are long nearly perfect ovals, slightly larger and perhaps less pointed than those of the Moonal. The shell is moderately fine and glossy, showing everywhere minute pitted pores similar to, but much less marked than, those of the Peafowls. The ground is a paler or darker olive brown, which is more or less thinly speckled and spotted, and at times blotched, with brownish red, pale chestnut, reddish or purplish brown. All the spots on each egg, and I think of every egg in the same clutch are of the same tint. The larger markings are apparently always towards the small end of the egg. In size thirteen eggs that I have measured vary from 2·5 to 2·8 in length, and from 1·8 to 1·98 in breadth.

"Mountaineer" (Mr. Frederic Wilson), quoted by Dr. Jerdon, long ago told us that "the eggs, which have been found by travellers, are about the size of those of the Turkey ; but, like those of the Grouse, are of a more lengthened form ; their ground color, clear light olive, sparingly dotted over with small light chestnut spots."

He now writes to me: "The Snow Pheasant or Snow Cock breeds at elevations from 12,000 feet to 17,500, but very rarely on the southern side of the Snows. The hills near the source of the Ganges, and the Sutlej Valley above the junction of the Buspa, which are breeding grounds, are in reality beyond the first Snowy Range, although a person may get to them almost without seeing snow. Both these places are breeding grounds of the Snow Pheasant, but by far the greater number of these birds which in winter are found on our side of the Snowy Ranges go up into Thibet to breed. The business of incubation commences about the end of May, and some eggs are laid as late as the beginning of July. The nest is a hole scratched in the ground under shelter of a stone, or rock, a tuft of grass or a juniper or other bush of the high regions where it breeds. The Snow Pheasants, and indeed all the rest of the Pheasants, exercise considerable ingenuity in picking out places for their nests, for they will almost always be found well sheltered from the rain. None make a nest,—that is, they *bring* nothing as material to it,—but nests, where grass and leaves are thick, get pretty-well lined with these and feathers. I have never myself found a Snow Pheasant's nest with more than five eggs, and of three that I have lately examined, each contained that number, but the paharis and Tartars assure me that they lay up to nine, and even twelve, and I have certainly seen as many as a dozen chicks at a time altogether. Still it is very possible these may have belonged to more than one brood. Snow Pheasants are eminently gregarious and do not always separate into pairs for the purpose of incubation. Where a lot of young chicks are seen, several old birds will generally be seen too. The eggs are about 2·7 long by 1·9 wide, of a greenish hue, minutely speckled with brown, chiefly at the pointed end."

817.—*Lerwa nivicola, Hodgs.*

I need not apologise for never having seen an egg of the Snow Partridge, when even Mr. Frederic Wilson, who has been amongst them for nearly thirty years, has never yet seen one,—nay, has been unable to find, even amongst the shepherds who see the birds daily during the breeding season, any one who has seen a nest.

He writes to me from Gurhwal: "Of the Snow Partridge I have failed to get eggs. It breeds on the high ridges jutting from the snow at elevations of from 12,000 to 15,000 feet, when the ground is tolerably broken and roughish, neither very rocky nor on what we call 'slopes.' The hills between the head waters of the Ganges and Jumna, and Jumna and Tonse, are favorite breeding grounds. The chicks have first been observed about the 20th of June. I have often come across them and been amused with the parent birds, both of which keep with the brood, counterfeiting lameness to entice an intruder away. This they do, I think, better than any Partridge I know, all but letting one catch hold of them. The chicks have the upper parts mottled grey and black; the head, with one black stripe down the middle and one on each side; the breast and belly, rufous; bill, black; feet, flesh color. In the adult the legs and feet and bill are red. I have tried hard the last two months for the nest and eggs, and it would be difficult to decide whether I am more surprised or disappointed at the failure. Knowing so well where they constantly bred, I anticipated no difficulty whatever in procuring as many eggs as I cared for, but a lot of men, out constantly from 15th May to end of June, have been unsuccessful."

818.—*Francolinus vulgaris, Steph.*

The Black Partridge or Common Francolin breeds in suitable localities throughout India Proper (excluding Burmah) north of an imaginary line drawn from the Runn of Cutch to Gwalior and from Gwalior to Ganjam. I believe that this line as nearly as possible indicates the boundaries of the areas of distribution of this and the next species, and though in some *few* places *pictus* does, I believe, straggle a little northwards of this artificial line, I do not think that the present species anywhere crosses it southwards.

It ascends the exterior ranges of the Himalayas throughout their whole length to elevations of 5,000 or 6,000 feet, but it does not, so far as my experience goes, cross the first Snowy Range. The Himalayan birds, it may be well to note, average smaller and are perhaps more brightly colored than those of the plains of Upper India and Sindh, but they are in no way specifically separable.

Grass, tamarisk, or similar jungle are essential to the Black Partridge, and they will rarely be found at any great distance from these two requisites. During parts of the year they may seem to make their homes in densely-cropped cultivated lands, but it will always be where jungle to which they can retreat, when the crops are cut, is within reach.

They lay mostly, I think, in June; a few lay somewhat earlier and later (I have found eggs in August), making their nests on the ground in Tamarisk or grass jungle, or in any thick crop near these that may be standing (and there are few such) at that season; of these the small millets reaped in some parts of the country in July are perhaps most often resorted to.

The nest, composed of grass and grass-roots, dry bamboo, grass-flag, or sugarcane leaves is sometimes very slight and loose, sometimes neater and more substantial; usually it is placed in a depression hollowed out by the bird, and again not unfrequently there is scarcely any nest, only a lining to a hollow. It is always perfectly concealed.

They lay from six to ten eggs; at any rate I have never known more to be found, and in former days, when shooting in the Ganges Kadir and the Terai in the hot-weather, the beaters and dogs used to find nests daily, and I have thus seen a great many.

Captain Hutton remarks: "This is a common bird in the Dhoon, and by no means rare in warm cultivated valleys far in the hills. It breeds in the hills in June, and a nest taken by a friend on whose accuracy I can rely, and who shot the old bird, contained six eggs of a dull greenish white color. The egg appears very large for the size of the bird, and tapers very suddenly to the smaller end."

Dr. Jerdon says: "The hen Partridge breeds from May to July, laying ten or twelve eggs (sometimes, it is stated, as many as fifteen) of a pale bluish white color, according to some writers; but those I have seen were pale greenish when first laid; and she usually has her nest in the grass, sometimes in an indigo field, and occasionally in a sugarcane field."

Typically the eggs are what I should call sphero-conoidal in shape, that is to say, broad blunt cones based on hemispheres. In color and in shape they very much resemble specimens of the eggs of our Common Pheasant, *P. colchicus*, which I have from England. They are of course smaller, but by no means so much so as the relative difference in the sizes of the two birds would lead one to expect. They are moderately glossy and perfectly unspotted, and the color varies from a slightly greenish to a brownish fawn color, or in some, as I ought perhaps to call it, stone color. Some of the eggs might perhaps be best described as drab-colored. The egg figured by Dr. Bree is smaller and more buff-colored than any out of the multitudes that I have seen, and it is moreover more oval, less obtuse at the large end and less pointed at the small end, than any of our Indian eggs. So far as shape is concerned, Dr. Bree's figure of the Greek Partridge's egg is more like those of our *Francolin.*

The eggs vary greatly in size, from 1·42 to 1·8 in length, and from 1·22 to 1·38 in breadth; but the average of fifty-eight is 1·6 by 1·3.

819.—*Francolinus pictus, Jard. et Selb.*

The Painted Partridge or Francolin is found in suitable country in most parts of the northern half of the *Peninsula* of India, extending northwards, as noticed when speaking of the previous species, as far as a line drawn from the Runn of Cutch to Gwalior and from this latter to Ganjam. Here and there it may cross this line for a short distance, but I believe that this artificial line of demarcation will be found to be tolerably correct.

Writing from Oomraotee (Berar), Mr. J. Aitken says: "The Painted Partridge, *F. pictus,* breeds during the monsoon. Shortly after the commencement of the rains, the birds may be heard calling loudly all over the fields, which are then covered with the young crops, and the greatest number of eggs are laid during the months of August and September. The nest is usually to be found in strips or isolated patches of grass and bush between cultivated fields. Five is the largest number of eggs which I have known to be found in one nest."

Writing from Jhansi, whence he sent me many of their eggs, Mr. F. R. Blewitt remarked: "This species breeds from the middle of July to September. The nest, which is usually placed on the ground in a slight excavation and under the shelter of a bush or thick patch of grass, is made of roots of grass and grass itself loosely put together,—quite a common made nest.

"The regular number of eggs is about seven or eight, in color of a smoky white generally, but when fresh-laid they are of a light reddish white, gradually changing to smoky white as the process of incubation goes on. The fair average length of the eggs is 1·43 and breadth 1·19.

"Dr. Jerdon very accurately describes its habits. It calls a little earlier in the morning than its northern congener, and of an evening till late.

"It is peculiarly active, uttering a low *click, click,* while it scratches up the ground for food; or it will roll itself in the dust, and nestle on the ground with apparent delight, all the while uttering the low *click, click.*

"From the moment they leave the eggs the young brood commence their peculiar cricket-like chirrup, and when they run it is not with the head erect but inclined forward on a level with the body."

Dr. Jerdon notes that "the female breeds from June to August, laying seven or eight eggs of a creamy or smoky white, generally near the shelter of some bush."

The eggs of this species are like those of the common *Francolin,* typically very broad and obtuse at the large end and much pointed towards the small end. They are, however, more of the peg-top shape than these latter, the large end being flatter and less spherical. In size they are very much smaller than those of the Common Black Partridge, although in the birds themselves there is no such great difference, I think, in either size or weight. The color varies a good deal; some eggs are drabby white with a very faint greenish tinge, others are brownish drab, others cream color, and some pale *café au lait*. They are spotless and somewhat less glossy than those of the preceding species.

In length they vary from 1·3 to 1·45, and in breadth from 1·1 to 1·22; but the average of a dozen is 1·39 by 1·16.

819 *bis.—Francolinus chinensis, Osb.*

The Chinese Francolin breeds within our limits only, so far as I yet know, in the comparatively dry portions of Upper Pegu. It does not, I believe, occur in the valley of the Irrawaddy lower down than Prome.

Mr. Theobald recorded having found a nest of this species at Meadey a little north-east of Thayetmyo on the 4th June. It was placed upon the ground and contained four uniform greenish cream-colored eggs, measuring 1·4 by 1·15.

From Thayetmyo Mr Oates writes that this species "is particularly vociferous in June and July. I have never myself actually taken the eggs, but the Burmans say that it is situated at the foot of a bamboo clump on a hill-side. I have had the eggs brought me in June. They are creamy or buffy white."

He very kindly also sent me specimens of the eggs taken on the 6th June.

These are much like those of *F. pictus;* they are of the usual Francolin, more or less peg-top, shape, are dull and have little gloss, and vary from cream color to dingy olive yellow or pale yellowish stone-color. They measure 1·45 and 1·51, by 1·2.

820.—*Caccabis chukar, Gray.*

How far all the various races of Chukar, the present species, *græca* Bonap., *saxatilis* Mey., *altaica* Bonap., *pallescens* Hume, *pallidus* Hume, *arenarius* Hume, from Europe, Palestine, Northern Asia, the high Himalayan plateaux, Central Asia, and Southern Arabia, deserve specific separation, and, if not, how many and which of these should be united, is still very doubtful. Typical specimens which I have compared of each differ very perceptibly, some in size (especially size of bill) and others in color, and these differences appear to be local and not individual; but for all that I suspect that when all intermediate localities are properly worked, a perfect series of connecting links will be obtained, when I at any rate shall advocate merging all these different forms in one species.

Our present species (or race) breeds throughout the Himalayas (by preference where there are grassy hills and cultivated fields) from Nepal to Afghanistan, and thence throughout the ranges that under various names run down from Attock to the sea dividing the Punjab and Sindh from Afghanistan and Khelat. It also breeds in the Salt Range. In these hills and mountain-chains its range is from the level of the plains to about 11,000 feet, but the paler form from Ladak which I have called *pallescens,* and which most probably should be united with *chukar,* is found and breeds, I believe, at much greater elevations.

They lay in April, May, and June, a good deal according to elevation, and I have eggs taken by Mr. Wilson in Thibet at an elevation of 16,000 feet on the 29th of July. The nest, composed of a little grass or a few leaves, at times laid on the flat surface of the ground, at others in a slight depression, natural or scraped by the birds, is placed often in fields, often under the shelter of some tuft of grass or dwarf bush on a grassy hill-side, occasionally under some similarly-situated rock barely shaded by tufts of drooping fern.

I have taken many nests, but never found more than twelve eggs in any nest, and, according to my own experience, should certainly say that eight to ten were the usual number; others, however, seem to have found more.

Mr. W. Theobald makes the following note on the nidification of this species in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lay in April and May; eggs, twelve. Shape varies from ovato-pyriform to blunt ovato-pyriform. Color, yellowish white or brownish cream color, faintly ringed and spotted with tan color. Nest, a few leaves on ground under bushes."

From Gurhwal Mr. Frederic Wilson writes: "The Chuckar breeds at all elevations, from 4,000 or 5,000 feet on the lower hills to 12,000 or 13,000 feet on our side of the Snowy Ranges, and to 16,000 feet beyond, and in Thibet. The nests may be found in cultivated fields, on grassy hill-sides, stony ravines, almost everywhere, except in forest or amongst precipitous rocks. They are, (like those of all the rest of our game-birds,) holes scraped in the ground. In the lower hills it begins to lay in April, in the higher in May; and I have found fresh-laid eggs in middle of June. The eggs are from seven to twelve or fourteen, sharply pointed, dirty white, minutely powdered with light brown. Some are spotted and blotched with the same."

Dr. Jerdon states that "the hen Chukar lays from eight to fifteen eggs, of a creamy white according to one writer, pure white according to Adams." It is needless to say that Adams is in error.

The eggs vary a good deal in size and shape, as well as in type of coloring, but typically they are somewhat elongated ovals, a good deal pointed towards the small end. Peg-top and sphero-conoidal varieties occur, but these forms are the exceptions in this species, while they are the rule in those of the three species of Francolin. The type of coloring too varies: in one type the ground color is pale *café au lait,* thickly speckled and spotted with purplish, reddish, or yellowish brown; in another the ground color is a pale creamy white or pale isabelline, and the eggs are pretty thickly blotched, streaked, and spotted with pale purplish pink, the spots and blotches being occasionally slightly in relief, as if drops of white paint tinged with purple had been dropped on the egg. The eggs are moderately glossy, more so perhaps than in the Common Francolin, less so than in the Grey Partridge. The common type is that first described, and in some eggs the specklings are so excessively minute that the eggs, looked at from a little distance, appear a uniform somewhat brownish *café au lait.*

The eggs vary in length from 1·55 to 1·9, and in breadth from 1·15 to 1·3; but the average of seventy-six eggs is 1·68 by 1·25.

821.—*Ammoperdix Bonhami, Gray.*

The Seesee breeds alike in the Salt Range and throughout the rocky hills that westwards bound our empire, from Attock to the Gulf of Oman.

This pretty little species is very common and tame in the Salt Range; a couple of dozens may be seen in a morning's walk, and if people are set to catch them large numbers are brought in. They are most generally seen running on the bare rocks or pecking about the droppings of cattle on the mountain paths; but at Tobur,—some 2,000 feet high, the rainy-season residence of the miners, who during the rest of the year reside in the Khewra Gorge (some 700 feet above the sea) and work the neighbouring Mayo Salt Mines,—I saw several pairs running about on the flat roofs of the empty houses. The males may often be seen perched on some rocky point; and the female in the spring, though less commonly seen in exposed positions, will always be found close to her mate. They run very rapidly and glidingly over the rockiest ground, rise pretty readily and fly smartly, always if possible down-hill. Both in gait and flight they remind one much of the Chukar.

Towards the end of March and early in April they may be seen love-making, and towards the latter portion of April they begin to lay, hatching off as a rule some time in May, though I have found fresh eggs on the 1st June.

The nest is at best very slight, a little dry grass curled into a whisp, and generally seems to be only represented by a few blades of grass laid in a depression scraped by the birds. It is placed at times under some thick stunted bush or overhanging rock; more often in the midst of loose stones; occasionally in one of the scanty tufts of grass that here and there dot these bare hills. They breed at all elevations from the level of the plains to at least 4,000 feet. Eight is the largest number of eggs that I have seen in any nest, but many more are said to be at times found.

Mr. W. Theobald makes the following note on the nidification of this species in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lay in April, May, and June. Eggs, twelve. Shape varies from pyriform to ovato-pyriform. Size, 1·4 by 1·0. Color, clear cream color. The eggs are laid in a slight hollow among stones in the hills."

Captain Cock writes: "I have taken several nests of this bird near Nowshera in the low adjacent hills, dry, parched, and barren places which only a strong love of ornithology would ever tempt a man to enter during the month of May when the heat is nearly unbearable. The nest is placed under a ledge of rock or between some stones. I once found one under a cairn of stones that had been erected by the herd boys. They lay from eight to twelve eggs, stone cream color, pointed at both ends, in shape and size resembling the eggs of *Podiceps philippinensis*. The nest scarcely deserves the name; a few dry bents, one or two feathers, and a hole in the ground, is all the nest they prepare for the reception of their eggs."

The eggs of this species are quite of the Bush Quail type, and though slightly larger are very close to those of *Microperdix erythrorhyncha*. In shape they are more or less lengthened ovals, a good deal compressed towards one end; some are slightly pyriform, and others, though these are the exceptions, more of the true Partridge shape. The texture of the shell is comparatively fine and close, but it is everywhere pitted with minute pores, which however are much less visible in some specimens than in others. Some of the eggs have a faint gloss; in others this is scarcely traceable. In color they vary a good deal: some are almost pure white, but the majority have a very perceptible creamy or very pale *café au lait* tinge.

In length they vary from 1·3 to 1·5, and in breadth from 1·0 to 1·1; but the average of twenty is 1·4 by 1·03.

822.—*Ortygornis pondiceriana, Gmel.*

The Grey Partridge is found and breeds throughout the more open and drier plains country of India Proper. It eschews equally the more humid tracts of Lower Bengal, the Dhoons and Terais that skirt the bases of the Himalayas, and the dense forests and forest-clad hills of Southern, Central, and Eastern India.

It lays from February to June, by far the most eggs being met with in April, and again from September to November. In all these months I have myself taken eggs, but comparatively very few in the autumn; and I have been unable to make out whether the eggs then found are a second laying of hens that have already laid in the spring, or whether they are only laid by birds that, owing to some accident, have had no spring broods.

The nest, when there is one, for I have repeatedly found the eggs on the bare ground, varies from a few blades of grass, a few feathers, or a few leaves, to a tolerably substantial pad nest of grass and leaves. It is usually placed on the ground, under some large clod in a ploughed field, under a bush, or in a tuft of grass, but is sometimes fixed in the lower branches of some dense thorny shrub as much as three feet from the ground. Typically I should say the nest was a shallow depression well concealed under a bush or in a large tuft of high grass, and more or less neatly and thickly lined with grass.

I have never found more than nine eggs, and I have more than a dozen notes of finding only six, seven, or eight much-incubated eggs.

Mr. W. Theobald furnishes the following note on the nidification of this species in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range:—

"Lay in the first week of April and in May and September. Eggs, nine. Shape, ovato-pyriform. Size, 1·29 by 1·03. Color, clear cream color. Nest, a litttle grass in a hole in the ground, usually sheltered by a bush, or in clumps of grass."

Captain G. F. L. Marshall writes from the Saharunpoor District: "The Grey Partridge breeds here from March till May. I saw a covey of young birds about a week old about the middle of April; again on 7th April I found seven fresh eggs, on the 23rd April I found eight slightly-set eggs, and on the 17th May I again found seven slightly-set eggs. In one case, the eggs were laid on a rough platform of grass and leaves in the middle of a tuft of surkery grass about eighteen inches from the ground; in a second the eggs were on the ground at the foot of a tuft of grass; and in the third case the eggs were in a cup-shaped hollow sunk in the ground, lined very neatly with feathers and soft leaves, in the middle of a little karounda bush which was growing on the top of a tiny mound. The eggs vary from milky white to an uniform *café au lait* color. The shell is very thick and rather rough."

Mr. A. Anderson says: "The Grey Partridge lays from six to nine eggs in April and May; the eggs are deposited in a hollow, which the bird scrapes out, most generally under the shelter of a clump of scrub jungle, and the standing grass is trodden down, which does for a nest lining.

"On the 4th April 1871, when out coursing on the *chur* lands opposite the Station of Futtehgurh, I flushed a 'Grey' which was feeding in an open field. It struck me at once that this was the male, and that the female must be *sitting* somewhere, because these birds invariably go in pairs, and this was their breeding season. Forming a line with my coolies, I beat every conceivable bit of cover (there was not a crop standing for miles), including a few clumps of *Sarpat* grass which grew in the form of a hedge. Giving it up as a bad job, I rode alongside of this grass hedge (it had been charred), and looking *down* into the centre of each clump, soon discovered what at first appeared a hare in her *form,* but which on closer inspection proved to be the hen partridge. The grass was again well beaten, and, as a last resort, handfuls of earth and small stones were showered in on her from above, but without avail. Seeing how futile were all my efforts to flush the Partridge, I decided on capturing her on her nest, which was effected by my horse-clothing being placed over the clump, and the coolies making a rattling noise round the bottom of the grass, which eventually had the effect of making her rise perpendicularly. The nest was carefully *fenced in* with grass-stalks, of the thickness of an ordinary cane, so that ingress and egress for so big a bird must have been a matter of no little difficulty. A portion of the stalks having been cut away disclosed nine eggs; eight were hard-set, and gave me a deal of trouble to make them into good specimens, the ninth was *abnormally small,* and *quite fresh,* measuring only ·8 × ·6.

" As regard size, shape, and color, the eggs of the 'Grey' are very different from its European congener, *P. cinerea.*

" The clutch above referred to are of a pale stone color, and about equally pointed on both ends; the shell is hard, well-grained, and measures 1·4 × 1·0.

" For assiduous perseverance during incubation, the above anecdote is hardly rivalled by the illustration given by Montague of the European bird, which allowed itself and eggs to be deposited in a hat and thus carried unresistingly into captivity, where it continued to sit till the young-ones were hatched."

Mr. J. Aitken remarks that " the Grey Partridge (*C. pondiceriana*) breeds in Berar in the beginning of the year. I have only once found the nest, but broken egg-shells may not unfrequently be found lying on the ground. The nest was of grass, it was well concealed under a bush, and contained six eggs of a creamy yellow color ; as they were perfectly fresh, more might possibly have been laid. This was in the month of February. The birds nest,—I may say, live,—always in the vicinity of water, their favorite haunt being Babool jungle growing by the side of a stream, from which they come out morning and evening into the fields to feed."

Dr. Jerdon says that " this Partridge breeds chiefly in the dry weather, from February to May or June, the hen bird laying usually eight or ten eggs of a cream or stone color, under a hedgerow or thick bush."

The eggs vary in shape from slightly elongated ovals, a good deal pointed towards one end, to broad peg-tops, but an intermediate form is the most common. The shells are fine and glossy, and the eggs average decidedly smaller than those of our Common English Partridge. Their coloring too is of an entirely different type, and is the same as that of the eggs of the Bush Quails', while the English Partridge in this respect more resembles those of the *Francolins.* The eggs are white, more or less tinged with *café au lait* color, this tinge varying much in depth and intensity, probably (though I have not accurately noted the fact) chiefly according to the stage of incubation at which they are procured. The eggs are spotless, but are often, especially the paler-colored ones, a good deal soiled and stained. I have never, out of some hundreds that I have seen, met with an egg that could be rightly called milky white.

In size the eggs vary from 1·2 to 1·42 in length, and in breadth from 0·95 to 1·12; but the average of fifty-four eggs is 1·3 by 1·03.

823.—*Ortygornis gularis, Tem.*

I have only once shot, and have never seen a nest of, the Kyah Partridge, and what is still more lamentable none of my correspondents have ever sent me its eggs or any notes in regard to its nidification. Of this latter all I know is what writers in the old SPORTING REVIEW, which is thus epitomized by Dr. Jerdon, have recorded :—

"The Kyah breeds early in the spring in some localities, at all events from March to May, and at this time is very difficult to put up. The eggs are said to be laid under some thick bush in a dry spot, and to be white, like those of the Grey Partridge."

823 *bis.—Perdix Hodgsoniæ, Hodgs.*

To Captain C. H. T. Marshall I am indebted for an egg of this rare and beautiful bird, Mrs. Hodgson's Partridge.

Captain Barnes, of the 10th Bengal Lancers, found a nest, when after big game in Thibet, containing ten eggs, but not knowing the value of the prize he secured, he unfortunately only preserved a couple.

Captain Barnes has himself most kindly favored me with the following note on the subject. He says :—

"This is what you may rely on, as I noted the facts at the time. I flushed the bird myself off the nest on the 12th July 1872. The nest was at an observed elevation of 16,430 feet.—*I think* (but am not now quite sure) that the nest was a mere indentation in the ground, it was in grass amongst low dwarf bushes. It contained ten eggs, *all* perfectly fresh. The Pass on which I found the nest leads from the Pangong Valley to the Indus Valley, and is very high. I did not take the elevation, but estimated it at 19,000 feet, as my camp, after crossing the summit and descending some considerable distance, was pitched that night at 17,745 feet. There was a great deal of snow on the summit, which is perpetual; the snow-line at *that season,* I should say, was *about* 18,500 feet. The name of the Pass is the Oong Lung La. The birds were neither scarce nor plentiful, but there were enough to make it a matter of certainty in obtaining a specimen if required."

The egg is in shape a long oval, obtuse at one end and sharply pointed at the other. The shell is hard, compact, and everywhere closely pitted with minute pores, but it is very smooth notwithstanding, and has a very fair amount of gloss. The ground is a pale drab, or clay color, but the whole of the large end has a faint reddish brown tinge, as has also the extreme point of the smaller end.

The egg measures 1·77 in length by 1·2 in breadth.

824.—*Arborophila torqueola, Valenc.*

I have never found a nest of the Peunra, a Partridge common enough from Sikhim to Cashmere but seldom seen, because it always haunts dark densely-jungled watercourses and ravines running down the hill-sides, and never, if it can avoid it, rises when disturbed, but threads its way under the fern and brushwood up or down hill with equal facility. As a rule, it keeps at elevations of from 5,000 to 8,000 feet. Dr. Stoliczka, I know, says it is generally found near the limit of trees or close to the Snows, *i. e.*, between 12,000 and 14,000 feet; but this is only because birds at this elevation, where the undergrowth is scant, are easier seen and flushed; and if he had had good dogs, he would have found twenty Peunras below 8,000 for one above 10,000 feet.

A nest, containing six eggs, taken on the 1st July near Koomarsain, north of Simla, at an elevation of about 7,000 feet, was brought to me with a pair of birds of this species which had been snared alive at the nest. The eggs were still unblown. The nest was a mere whisp of grass and dry fern leaves, and had been found in thick jungle in a dark ravine in the middle of a tuft of fern at the base of a rock.

One cannot trust native hunters implicitly, but I am inclined to believe that these eggs are genuine, because there is positively no other species, to the best of my belief, that could have laid them. They are not eggs of the Common Francolin, though they are (and this is what rather makes me doubt) very much of the same type. The Snow Partridge never breeds so low down, and it can hardly lay eggs of this type; besides the eggs are too small. If not really pertaining to the Peunras snared close to them, and the men themselves had never seen either on the nest, I am utterly at a loss to guess what they can be, and must suppose them to be an abnormal clutch of Francolins' eggs laid by some irregular-minded bird that chose a situation for her nest quite foreign to the habits of her fellows. All the men knew was this:—they found the nest about noon, watched until sundown and saw nothing, and went away studding the whole clump of fern with nooses and snares. In the morning they returned about 10 o'clock, and found a male and female Peunra snared. Time must show whether, as I believe, the eggs really pertain to these birds.

The eggs are very much of the *Francolin* type, intermediate in size between the eggs of *F. vulgaris* and *pictus* and a good deal darker and browner than those of either species. They are of the usual shape,—broad ovals,—pointed towards one end, and somewhat pegtop-shaped, with stout glossy shells covered all over with minute pits. In color they are pure, but dark, *café au lait* brown, and all of them have a number of pure white specks and spots about the large end. This may be an exceptional peculiarity, for all the six eggs I possess were taken, as above remarked, from a single nest. They appear to be unusually large for the size of the bird. Their cubic contents must be nearly double those of *O. pondiceriana*, and something like a third greater than those of *F. pictus.*

They vary in length from 1·5 to 1·62, and in breadth from 1·28 to 1·34; but the average of the six is 1·54 by 1·31.

827.—*Perdicula argoondah, Sykes.*

Mr. Gray says that the Rock Bush Quail, as Jerdon calls it, should stand as above, that the Jungle Bush Quail identified with *cambayensis*, Lath., is the true *asiatica* of Lath., and that the *cambayensis* of Lath. is a Malaccan species not found in India.

I have not had time to look into this, but supposing the nomenclature correct, I want if possible to make clear the difference between the two Indian species we have, *viz.*, the Rock Bush Quail, *P. argoondah* (*P. asiatica, apud* Jerd.), and the Jungle Bush Quail, *P. asiatica* (*P. cambayensis, apud* Jerd.). I do not say that Mr. Gray is right and Dr. Jerdon wrong. I have not worked the matter out, but taking Jerdon's trivial names and Gray's scientific ones, I want to explain clearly if I can how the two species differ, so that if possible I may hereafter make out their respective distribution, which at present, owing to the confusion that prevails in regard to them, seems a hopeless muddle.

The adults of both sexes (and I believe the young also) may be distinguished at a glance by two characters—

1*st.*—The *bright chestnut* hue of the chin and throat of the Jungle Bush Quail, which contrasts equally strongly with the white black-barred lower surface of the male and the dull rufous of the same parts in the female. In the Rock Bush Quail the chin and throat are dull rufous, the chin often being, especially in the females, whitish, and in these latter the throat is unicolorous with the breast. It is difficult to represent colors accurately in words, but bright chestnut and dull rufous (*slightly* suffused in many specimens with a grey shade) are so different, that this coloration of chin and throat ought alone to suffice to distinguish adults, at any rate, of the two species.

2*nd.*—The long well-marked yellowish white superciliary stripe which in the Jungle Bush Quail begins in males at the nostrils and in females a little further back, and in both runs over the eyes and ear coverts right down to the nape, averaging in males 1·15 and in females 0·9 in length. In the Rock Bush Quail the supercilium is by no means well marked, very narrow, and only just extends to the ear coverts; in many specimens it is scarcely traceable. Moreover, the supercilium, such as it is, in the Rock Bush Quail is *immediately* above the eye and ear coverts, whereas in the Jungle Bush Quail the long supercilium is separated from both eye and ear coverts by a narrow band of the same rich chestnut as the throat.

Besides these differences there is in the males of the Jungle Bush Quail a well-marked yellowish white rictal stripe running under the eye and ear coverts, while in the Rock Bush Quail there is only a faint trace of a pale line.

The black bars on the lower surface of the Jungle Bush Quail are far more regular and better marked than those of the Rock Bush Quail; indeed, in this latter species it is only on the neck and breast that they are at all regular and continuous, while in the Jungle Bush Quail they are regular and continuous almost to the vent.

In the females of the Jungle Bush Quail there is only a trace of the rictal stripe. The young males resemble the females, but have the rictal stripe well marked. At first the breast and abdomen is the same dull rufous, faintly suffused with grey as in the adult female; then the tips of some of the feathers become yellowish, then a dusky line appears above this tip, then the tip becomes whiter, the line becomes a dark bar, and above this a pale bar bounded by a dark line begins to show; lastly, the tips and bars become nearly pure white and blackish brown, the rufous disappears entirely, except about the vent, thigh coverts, and lower tail coverts. These parts, I may note, are always *rufous* in the Jungle Bush Quail and a kind of pale dingy sandy hue in the Rock Bush Quail. I have also remarked that in this latter species there are almost invariably more or less distinct bars on the lower tail coverts, whereas in the former species these are (in all the specimens I have seen) entirely without any trace of bars.

As to the distribution of the two species I can say little. Both occur in the Etawah District, where however the Rock Bush Quail is the commonest. I have the Jungle Bush Quail from Dr. King, from Mount Aboo, from Jaulna, and many places in Southern India, and I have shot it myself in low valleys (say about 4,000 feet above the level of the sea) near Simla. The Rock Bush Quail I have from Jhansi and Saugor (with the eggs) from Mr. F. R. Blewitt, from Coimbatore, Sambhur, Berars, and many places in Northern India, and I have shot it myself in Gwalior, Bhurtpoor, Etawah, Meerut, Futtehgurh, Cawnpore, Goorgaon, and Sirsa.

I cannot attach much value to what has hitherto been recorded as to the distribution of these two species, because it is next to impossible to make certain as to which species was referred to by each author under each name.

There is however no mistake as to the trivial names. Jerdon at once agreed that the comparatively bright chestnut chin-and-throated birds, with the long supercilium, were his Jungle Bush Quails. Neither is there any doubt as to the distinctness of the two species; some of the young birds may be puzzling till the eye has become perfectly familiar with the two species, but if you get birds breeding,—and that is what we are here concerned with,—there can be no mistake about the species if my diagnosis is attended to.

The Rock Bush Quail, the only species whose eggs I have myself taken, lays at any time from August to December and again in March, and for all I know may lay straight on all the year through; but I have myself taken nests in all the months mentioned. I think they have two broods in the year, but cannot be certain; anyhow March and September are the months in which I have found most eggs.

They always prefer semi-waste strips of land, covered with high grass and in the neighbourhood of cultivation, for nesting. The nest is slight, composed of grass loosely wound round into a circular shape, and is placed generally but not always in a depression, scratched for it by the birds, at the foot of some tuft of grass or under some thick bush.

Six or seven is the usual number of eggs laid. I have never seen, though I have *heard* of, more in a nest.

Writing from Jhansi, Mr. F. R. Blewitt says: "The Bush Quail, I do not know which, but I send you both birds and eggs," and the birds were the *Rock* Bush Quail, "breeds in August and September. The nest is merely an excavated cavity of from 5 to 6 inches broad, at the base of a thick patch of grass and quite under it. A few pieces of grass are laid at the bottom of the nest. The female sits very close on the eggs, and I have stood a yard from the nest without her attempting to rise; only when I have brought my hand near to her has she flown off. The eggs are of a pale reddish white, and six appears to be the regular number of eggs, though probably it may be seven or eight. In average length they are 1·1, breadth ·83.

"Walking early one morning with a pointer in the garden, the latter suddenly pointed facing an orange tree. Curious to know the cause, I approached the tree, when suddenly from a lower branch four of the Bush Quails flew away. Again the other morning my spaniels were beating some low grass and flushed a Bush Quail, which flew and sat on the upper branch of a large Neem tree. These are the only two instances in which I have seen this Quail perch on trees."

Writing from Oomraotee in Berar, Mr. J. Aitken remarks: "The Rock Bush Quail is very abundant here; coveys may be started wherever there is the slightest cover. They breed during November and December. I have found the nest repeatedly; it is composed of grass, and placed under a bush. Sometimes it contains as many as seven eggs; they are large for the size of the bird, and might pass for diminutive eggs of the Grey Partridge. Even at this breeding season they seem to feed in company, and newly-hatched birds may frequently be seen running amongst half-a-dozen old ones. But the female continues to watch over her brood with the utmost solicitude, and I have had to swerve my horse to prevent his setting his foot on one as she crouched anxiously over a chick."

Typically the eggs are moderately broad ovals, a good deal pointed towards the small end; but more or less elongated varieties occur, and here and there pretty perfect ovals, or even eggs pointed at both ends, are met with. The eggs are white, glossy, and spotless, tinged, but far less deeply than in the Grey Partridge, with excessively pale *café au lait* color.

In length they vary from 0·95 to 1·12, and in breadth from 0·78 to 0·91; but the average of forty-one eggs is 0·84 by 1·02.

828.—*Microperdix erythrorhyncha*, *Sykes.*

The Red-billed Quail is certainly not in my opinion congeneric with the last, and I accept, therefore, Gould's name, *Microperdix*, for the present species, inappropriate as it is for a Quail-like species. It is common throughout the hills and jungles of the Peninsula of India and on the west occurs as far north as the Satpooras, and, I am informed, as the Ghâts above Bombay. On the east, in the jungles of the Mahanuddy, Sumbhulpoor and Sirgoojah in Chota Nagpoor, it appears to be replaced by a closely allied species, *M. Blewitti, nobis,* (STRAY FEATHERS, Vol. II, 512.)

The present species is extremely abundant on the Nilghiris, whence (from Kotagherry) Miss Cockburn writes: "The Red-billed Quail breeds in the months of January, February, and March, and again in September and October. They build no nests, but merely scratch shallow holes in the ground in which they lay from ten to fourteen eggs. A few minutes after the young are hatched, they are able to accompany their parents in search of food. I do not know a prettier sight than a brood of young Quails running after the old birds. They are such pretty little dark downy things, with three stripes of a very light cream color extending down their backs."

Eggs of this species sent me from the Nilghiris are long ovals, pointed towards the small end, somewhat glossy, spotless, and of an uniform, often very pale, *café au lait* color. Both in color and size these eggs are intermediate between those of the Grey Partridge and the Rock Bush Quail.

In length they vary from 1·14 to 1·35, and in breadth from 0·87 to 0·95; but the average of twenty-five eggs is 1·23 by 0·91.

829.—*Coturnix communis, Bonn.*

I have only myself found a single nest of the Common Quail in India, and that was in April (29th) in the north of the Purneah District. The nest was a shallow saucer-like depression scratched by the bird and lined with a few blades of dry grass. It was placed in a tuft of grass and dwarf *zizyphus* on a ridge separating two millet fields. The nest contained nine eggs absolutely in the act of hatching off. We caught the female on the nest, examined the eggs, found the point of the bills protruding in two, so put them gently back, and put the mother gently on the top, where she sat winking at us in a most unbecoming manner, but never attempting to leave the nest.

I have but little reliable information about the nidification of this bird in India generally, but I believe that while the vast majority of those myriads which so often throng in Northern India our ripening wheat and barley fields in spring are true migrants, a few birds remain throughout the year in most parts of India, and breed with us as permanent residents.

Dr. Jerdon says: "The female lays from eight to twelve eggs, dull whitish, blotched and speckled with umber brown. 'Gunga,' in the BENGAL SPORTING MAGAZINE, says that on one occasion he found four whitish eggs, dotted and blotched with pale red."

The first sentence, however, is merely a quotation from Yarrell. Dr. Jerdon himself told me that he had never seen a nest; and as for "Gunga's" eggs, the description does not lead one to a clear conviction that they really belonged to the present species.

Writing from Lahore, Captain C. H. T. Marshall remarked: "I found a Quail's nest, containing fresh eggs, on April 14th. The nest was in the corner of a tobacco field; I saw the parent bird. The nest was only a hollow scraped in the ground, at the root of a tobacco plant, with a few bits of dry grass in it. The eggs were eight in number and were a dirty yellowish white covered with small and large dark umber brown blotches. I believe this is the first instance of a nest of this bird being noted in the Punjab. I fully believe, could I have got a good searcher, I should have found several others. This nest was half a mile from my house."

Mr. William Blewitt says: "I only found one nest of this species, and that was in the Danah Beerh, near Hansi, on the 25th March. Under a wild plum or *zizyphus* bush a slight hollow had been scooped, and this had been lightly lined with leaves and straw. It contained three fresh eggs."

Captain G. F. L. Marshall remarks: "On the 25th March I obtained a nest of the Common Quail, *Coturnix communis*, at Allahabad. It contained six eggs nearly ready for hatching, and was situated, as described by Dr. Jerdon, on a little tuft of grass in a field in the Ganges Khadir surrounded by a good deal of jungle.

"As far as my observations go, the breeding of these birds in the North-West Provinces is very unusual, and the fact may be worthy of record. The Quails were in abundance at the time, and affording excellent sport. Perhaps none of the keen sportsmen who were out after them realised that some at least of the birds were breeding. It may possibly turn out to be the case that their breeding here may be more general than is supposed, and that they come for this purpose and not solely on account of the attraction of the grain fields."

Further information on this subject is much required.

The eggs of this species sent me from various localities closely resemble, but are all somewhat smaller than, those that I have procured in England. In shape they are broad ovals, a good deal pointed towards one end. The ground color is a clear yellowish or reddish buff, and they are thickly speckled and freckled, or more thinly spotted or blotched, with deep reddish brown or at times bluish black. The markings vary much in character and in intensity; some eggs are finely freckled and speckled all over, others have only a few large bold blotches accompanied by a few outlying spots and specks. They are only moderately glossy.

In length they vary from 1·1 to 1·2, and in breadth from 0·83 to 0·95; but the average of nine eggs is 1·16 by 0·91.

830.—*Coturnix coromandelica, Gmel.*

As to the limits of the area within which the Black-breasted Quail breeds, I have, I regret to say, no very definite knowledge. I have never myself found the nest, and my present impression is that except, perhaps, in the Sub-Himalayan tracts, it breeds but sparingly in Continental India.

In the Dekhan, however, it breeds in multitudes, and it is to Mr. Henry Wenden and Mr. James Davidson (both stationed at Sholapoor during the last breeding season) that I am indebted alike for the only certain information I possess as to its nidification and for a truly magnificent series of its eggs.

August and September are the months in which it lays in the Dekhan, and nine appears to be the full complement of the eggs, though as few as four are occasionally found more or less incubated, and the bird clearly does not commence sitting until she has laid the whole clutch.

Mr. Wenden writes: "It was on the 28th July, this year, that I received my first warning that it was time to discontinue shooting these birds. On that day many of those we shot had well-developed eggs in them. For a week or so before this the bird had been calling vigorously, evident signs of pairing.

On the 4th August I found and took a nest with four eggs.
On the 7th „ „ „ one with six and another with the same number.
On the 12th „ „ „ one with five.
On the 14th „ „ „ one with six, hard-set.
On the 25th September „ „ one with nine, showing signs of incubation.

"On the 9th of August I found a single egg, not in, but close by, the nest, from which I took six eggs on the 7th, and it struck me that the bird may have been about to lay it when I flushed her from the nest (on the 7th) and dropped it as she rose, or, on returning and finding her eggs gone had deposited it where found. All the eggs I found were deposited in hollows in the ground, (some of them like the imprint of a cow's foot, others so slight as to be almost unobservable), without any lining whatever. The only case in which I noticed any pretence to a nest was on the 12th August when I found five eggs in a cucumber field. The bird had scraped a hole in a mass of decayed leaves. I noticed many nests besides those which I took, they were all of the same type, most of them in Jowaree or Bajaree fields, some few in grass,—most of them, close under the plants, or a bush, some of them in the bare open.

" In every case where I had an opportunity of watching the nests, the eggs were laid daily.

" The birds sit very close when hatching. I have watched several, and on two occasions attempted to cover the sitting bird with my hat. I have never seen a male bird on the nest, or near the hen, but from the persistent way in which the males call and the females answer, I concluded that the male never went far away from the nest. I consider that the breeding-time may be fixed as beginning on 1st August and ending on 15th October.

" I noticed many nests in which the eggs of Quail had been destroyed by snakes, lizards, or field mice, most probably the latter I think.

" I never myself found a nest containing more than nine eggs, but Mr. Davidson found two, containing respectively eleven and eighteen eggs, the produce doubtless of two hens, because though I saw so many nests, I never found more than nine, though I always allowed *at least* two days to elapse after the last egg was laid before taking the nest.

" Mr. Davidson got a *Phansee Pardee* (native fowler) to snare a hen bird off a nest, and while carrying it home (in a blanket bag) the bird laid a perfectly-formed, well-shaped egg of a *pure white* color, unspotted and unglazed.

" Many of this year's birds were on the wing by the 20th of September, at any rate that is the first day upon which I noticed any.

" Four is the smallest number of incubated eggs observed."

Mr. Davidson remarks : " The Rain Quail breeds in great numbers round Sholapoor, and any number of eggs could be easily obtained there.

" I obtained various nests ; amongst others—

" One brought to me on the 9th August, contained five eggs.
" One brought to me on the 12th August, contained four.
" One taken by myself on the 13th August, contained six.
" One brought in to me on the 18th August, contained eight.
" One taken by myself on the 18th August, contained eleven.
" (*All the eggs of all these nests were fresh.*)

" In the case of the last I shot the cock bird within ten yards of the nest, but he did not rise directly off them, as I was stooping to pick them up when he rose; the hen did not rise, though, on beating about with only two men, several birds of the same species were flushed within two hundred yards. The eggs in this last nest belong to such very different types, that I am almost sure they must have been laid by different hens. And I can only account for it on the supposition that in a place like this where great numbers are breeding close together, two hens may (as I have often known Partridges and Pheasants to do) lay in the same nest. In this case there were nine of the darker type, and two of the lighter in the nest.

" This is farther rendered more likely by the fact that the native fowlers I was employing informed me of a nest containing seventeen eggs. I rode out next morning, not being able to get out so far (five miles) at once, and was much disgusted to find all the eggs, *eighteen* in number, broken ; they belonged in about equal proportions to the two darkest types of eggs. It is possible that the fowlers, who are frightful liars, might have put them there, but I do not think so, as I promised them a rupee a nest with the bird sitting on it. As the nest was distinctly a Quail's, I think their putting additional eggs in out of some other Quail's nest very unlikely, as by that they simply got the reward for one nest, instead of two.

" One thing about these Quails I noticed was the enormous number of nests that are destroyed. I hardly ever walked out without discovering broken eggs lying about, but what animal was the culprit I never could be sure, though I suspect the Common Crow Pheasant, and the large Lizard (Bloodsucker) are generally the offenders.

"The nests were of the most rudimentary description, a slight hollow with a few blades of grass or jowari laid in it formed the whole concern, and in one case even this was wanting, and the eggs were laid in a hollow in the bare ground.

"The first eggs I obtained were two nests, on the 9th August, containing five and eight fresh eggs, respectively.

"The last, also containing five fresh eggs, was obtained on the 2nd October, but this was probably owing to a former nest being destroyed."

Dr. Jerdon states that "this Quail lays from six to eight eggs, generally of a creamy pink color with a few brownish spots, in a tuft of grass, in June and July."

According to Mr. Hodgson's notes this species arrives in Nepal about the end of April, when there is usually some rain, and not till after a shower or two. They breed there during May and June.

The eggs of this species are excessively variable both in color and size, but I observe that all the eggs of one clutch are in the vast majority of cases, not only similar in shape and type of coloration, but also very uniform in size. So much so is this the case that I mixed up eight clutches (every egg dated), and then without once referring to the dates picked out each clutch merely by the look of the eggs without a single mistake. No doubt, in some few clutches, one, two, or more eggs of a different type to that of the rest occur. These, I believe, have been laid by other birds and not by the hen to which the nest belongs. They are excessively prolific layers, and I suspect not unfrequently when anything has happened to their own nests lay in any other nest that happens to come handy.

The eggs vary in shape from rather broad ovals, obtuse at both ends, only slightly compressed towards the smaller end, to somewhat more lengthened forms, rather conspicuously pointed towards the latter.

The shell is rather fine and smooth, with, in some cases, only a very faint gloss, but usually a tolerable amount of "shine."

The coloration is so variable that it is difficult to describe. The ground varies from a faintly yellowish white, to rich *café au lait* color, and in one clutch of nine eggs taken on the 25th of September, possibly the second or third laying of an exhausted bird has a strong ferruginous tinge throughout, as of dried blood.

The markings are of three types,—(1*st*,) fine specklings and spottings thickly spread over the whole surface of the egg. Many eggs of this type strongly recall those of our several species of *Turnix* ; (2*nd*,) bold blotchings and frecklings. Some eggs of this type resemble much those of the Common Quail; (3*rd*,) marblings, not unlike what are sometimes exhibited in the eggs of Sand Grouse.

In color the markings equally vary ; blackish, purplish, olive, and burnt sienna browns, all occur ; but each egg exhibits only one shade. With one exception the ground also seems to be always uniform, but in the speckly types where the markings are purplish brown, and the ground is pale, large patches of this are suffused with a pinkish purple tinge.

Typically the markings are closely set, but in some few specimens this is not the case. How much these eggs vary may be judged from the fact, that to convey anything like an adequate idea of the series now before me, it would be necessary to figure at least nine examples, and yet there is not one amongst them that (now that I really know the egg) could be confounded with that of any of our other birds.

In length the eggs vary from 1·0 to 1·21, and in breadth from 0·8 to 0·89, but the average of fifty-six eggs that I have carefully measured, is 1·09 by rather more than 0·83.

831.—*Excalfactoria chinensis, Lin.*

I never found a nest of the Blue-breasted Quail. Captain Hutton tells me that it breeds in the lower warmer valleys below Mussoorie in June and July, not commonly or regularly but occasionally, and to him I owe a single egg taken in July from a nest in one of the lower warmer valleys running into the Dhoon. This, the sole egg that I possess of this species, is in shape a broad oval, much compressed and pointed towards the small end, and with a slight pyriform tendency. It is a good deal smaller than the eggs of any of the Bush Quails or than those of the *Turnix taigoor*. The ground is a dingy greenish white, thinly speckled here and there with reddish brown. The egg has very little gloss, and is an old and faded one.

It measures 1·0 by 0·78.

Dr. Jerdon says: "In Purneah in the month of July it was the only Quail I observed. It breeds in this month, the eggs being pale olive green."

832.—*Turnix pugnax, Tem.*

As far as I have as yet investigated the matter it is impossible to separate specimens of the Bustard Quail from various parts of the plains of India, Burmah, and Malacca. I have a fair series now, and this is my *pro-tem.* conclusion; I therefore suppress the name *taigoor*, Sykes. On the other hand, the Himalayan Bustard Quail is, it seems to me, probably distinct, and it can hardly be identical with *Scopoli's ocelata*, (*luzonensis*, Gmel.) from the Philippines, and therefore for this I retain Hodgson's name "*plumbipes*."

The present species, the Black-breasted Bustard Quail, breeds pretty well all over India and Burmah, where there is forest and jungle, accompanied with long grass. In the wooded districts of the Central Provinces, in Oudh, and Bengal, in the sub-montane districts of the North-West Provinces, and the Punjab, it is common, while in the more open and indifferently wooded and watered parts of the North-West Provinces, the Punjab, Rajpootana, and Sindh, it breeds only as a straggler when it does make its appearance, arriving during the rains and leaving early in the cold-season.

It may lay twice a year, but I have always found the eggs in July and August and at no other time. Sometimes it makes no nest at all, and merely scratches a hollow at the base of, or in the midst of, some tuft of Sirpatta grass, or occasionally some little dense bush adjoining or surrounded by long grass. Sometimes it makes a little pad of grass, rather soft dry grass, 3 or at most 4 inches in diameter and ½ inch in thickness, which it places as a lining to the hollow.

I have always found four eggs, and notwithstanding what Dr. Jerdon says, I have seen so many nests, at least six during the past month (July), in the Botanical Gardens, Calcutta, that I am quite certain this is the normal number.

Mr. A. G. Theobald writes: "I found a nest at Ahtoor, the hill station of the Shevaroys, on the 20th August. It was a bare circular hollow scraped out at the base of a thick shrub, and had absolutely no lining. The eggs, four in number, were laid on the bare earth. I send the eggs."

Mr. W. Theobald makes the following remarks on the nidification of this species in Monghyr:—

"Lays in the first week of June. Eggs, four in number, round pyriform. Size, 0·88 by 0·74. Color, yellowish grey, closely freckled with dark yellowish grey, blotched with deep reddish umber, with a few dots of neutral. On ground."

Dr. Jerdon says: "The eggs are said to be usually deposited under a bush or a slight, well-concealed hollow. They are from five to eight in number, and of a dull stone grey or green color, thickly spotted and freckled with dusky, very large for the bird and very blunt. In the Carnatic this bird breeds from July to September, further south from June to August, and in Ceylon, says Layard, from February to August. The females are said by the natives to desert their eggs and to associate together in flocks, and the males are said to be employed in hatching the eggs; but I can neither confirm nor reject this from my own observations."

With the *Turnices* we enter on quite a new type of egg, somewhat reminding us no doubt of those of the Common Quail, but yet widely differing in color and general appearance. In shape the eggs vary from moderately broad ovals, scarcely at all pointed towards the small end, to typical peg-tops. The ground color is greyish white, and they are very thickly and minutely speckled all over with what a close examination proves to be a mixture of *minute* dots of yellowish and reddish brown and pale purple. Some eggs have absolutely no markings except this minute dotting or stippling, but the majority have spots and blotches more or less thinly speckled over the surface (often only at the large end, always most thickly there) of intense reddish or blackish brown or even bluish black. The minute dottings in many eggs, everywhere dense, are most so at the large end, where with the blotches they occasionally form an irregular, imperfect and ill-marked, mottled or smudgy cap or zone. The general appearance of the egg, when not closely looked into, is paler or darker dingy earthy brown, with dull blackish spots and small blotches. Some of the eggs have scarcely any gloss; others are highly glossy.

The eggs vary in length from 0·8 to 1·02, and in breadth from 0·72 to 0·85; but the average of thirty is 0·93 by 0·79.

833.—*Turnix plumbipes*, *Hodgs.*

The Himalayan Bustard Quail is I am at present inclined to believe distinct from that which we obtain all over the plains of India and Burmah and receive from Malacca, but I am not certain that it does not occur in the larger hill ranges of Burmah and the Malayan Peninsula.

This species, so far as I yet know, is confined to the outer and lower ranges of the Himalayas (in which they rarely ascend, even in summer, to any elevation above 6,000 feet) and the valleys that skirt their bases.

Captain Hutton remarks: "On the 30th July the eggs were taken in the Dhoon near the foot of the mountains. Color, stone grey, irrorated with small specks of brown interspersed with larger spots of neutral tint, which form an irregular ring at the larger end. They measured rather less than an inch by 0·75. The number of eggs was four only, but the proper number, according to Jerdon, far exceeds this. There was no nest, but merely the usual scratched spot on the ground, with a little dry grass and leaves, beneath a few stunted bushes. The bird ascends in the summer to about 5,500 feet, and breeds there also. It has a pleasing ringing note, and is brought in large numbers for sale. It is very pugnacious, but is easily tamed."

From Sikhim Mr. Gammie writes: "I have found this bird breeding in May and June in the Darjeeling District from 2,000 to 4,000 feet. It builds in the ground in open, cleared, country, by the sides of small shrubs or tufts of low grass. It sits very close and can easily be caught on the nest. The nest is usually, though not always, hooded, loosely made of dry, half-rotten grass, and measures externally about 4 inches in height, to the top of the hood, by the same in width. The cavity is about 2¾ inches in diameter and an inch in depth from lip of cup. The eggs are four in number, and the young leave the nest directly they are hatched. The bird is common in the tea and cinchona plantations, and,—in wet weather especially,—greatly frequents the roads, only rising when almost stepped on. It is a source of great annoyance to timid ponies, rising as it does with a whir from under their noses. It is a very solitary bird, rarely more than one being seen at a time. I am not certain that it is migratory, but cannot recollect ever observing it during the cold-season."

Dr. Jerdon tells us that "it occurs up to a level of 7,000 feet, and I have seen it occasionally in grassy compounds in the station of Darjeeling. I had the egg brought to me once, very similar to that of *taigoor*, but darker and a trifle larger."

The eggs of the Hill Bustard Quail very closely resemble those of the plains bird, and though they seem to average decidedly longer and somewhat narrower, and to be as a body browner and darker, with more numerous and larger black blotches, *some* of those that I have from Sikhim are undistinguishable from others from Salem (Madras), Jhansi, &c., and unless some clear distinction can, as I am at present inclined to believe, be established between the birds themselves, there is (it must be admitted) scarcely sufficient difference in the eggs to convince any one that the two forms are more than races of the same species. Typically the eggs are broad short ovals, much compressed and somewhat pointed towards one end; but some are very regular ovals, scarcely smaller at one end than the other and very obtuse at both; some again are nearly spherical, while peg-tops in the exaggerated form not uncommon in the eggs of the plains bird seem very rare amongst those of the Hill Bustard Quail.

The shell is fine and the eggs are decidedly glossy. The ground color varies from greyish or creamy white to a pale brown stone color, and they are stippled all over with excessively minute dots of what, unless closely looked into, appears to be dusky brown, and in some eggs almost black, but which is really a mixture of yellowish and reddish brown and pale purple and black specks. Some eggs have no other markings, but most of them exhibit a greater or less number of larger spots and blotches either black or a deep brown that is almost black. These markings are almost confined to the large end; at any rate the larger blotches scarcely ever occur anywhere else, and even there it is only quite exceptionally that they are numerous or thickly set.

In some eggs the stippling is coarser and more strongly defined and the black specks predominate, so that looked at from a distance one might describe the egg as cream color thickly speckled all over with dull black. This type of egg rarely exhibits any large blotches.

In length the eggs vary from 0·93 to 1·04, and in breadth from 0·71 to 0·85; but the average of nineteen eggs was 0·96 by 0·77.

834.—*Turnix joudera, Hodgs.*

The next and not this species is clearly Temminck's *T. Dussumieri.* This is *tanki* of Buchanan Hamilton, but that name was not apparently published with a description until Blyth published it in 1843, (JOURNAL ASIATIC SOCIETY, VOL. XII, p. 181, bis,) whereas Hodgson's name was published with a figure in 1838 (BENGAL SPORTING MAGAZINE).

Of the nidification of the Larger Button Quail I know nothing personally.

Captain Oldham of the 12th Regiment not long ago sent me an egg with the following note:—

"I took the egg from the body of a Larger Button Quail. This Quail I shot with others on the 26th of this month (August), near this station, in fields of Indian-corn and cotton. As Jerdon says he knows nothing of the breeding of this species, you may perhaps care to have the egg. The other Quails shot were the Rain Quail and the Lesser Button Quail, but the Larger Button Quail predominated. There were evidently several pairs."

This egg from Sealkote, which was extracted from the oviduct of the parent bird, is of the ordinary *Turnix* type. In shape it is a very broad oval, but pointed towards one end; in fact, three-fourths of the egg are spherical, the remaining quarter is, as it were, pinched out into a point, and this is not an uncommon shape amongst the eggs of this genus. The shell is glossless. The ground color is a dull white, very minutely speckled all over with pale yellowish brown and inky purple. The markings are most dense at the more obtuse end of the egg, where they are intermingled with a few small inky grey clouds. Another egg of this species, received from Mr. Blewitt, of Raipoor, together with the parent bird, but unfortunately without particulars, is similar in size and shape and in the general character of its markings, but has a slight gloss, the ground color is yellowish stone color, the markings are brighter-colored, and the inky clouds and spots darker and more numerous.

These two eggs measure—the first 0·88 by 0·77, and the second 0·85 by 0·73.

835.—*Turnix Dussumieri, Tem.*

I never succeeded in finding a nest of the Lesser Button Quail. I have never found the bird *common* anywhere. Mr. W. Blewitt found a nest near Hansi in the Dhana Beerh on the 16th April. It was a mere depression, scratched in the ground, at the base of, and completely overhung and concealed by, a dense tuft of soft grass, and very slightly lined with a few blades of the same grass, so few that it was impossible to say whether they had fallen there by accident or had been placed there by the bird.

The nest contained only two fresh eggs.

At Sholapoor, in the Dekhan, Mr. J. Davidson found a nest containing four hard-set eggs on the 17th of August which, though he failed to secure the parent bird, undoubtedly belonged to this species. The nest was placed in a field of low bajra, and was formed in a hollow on the ground,—such a hollow as would be caused by the imprint of a cow's foot,—which was well lined with fine grass.

Mr. W. Theobald makes the following note of the nidification of this species in the neighbourhood of Pind Dadan Khan and Khatas in the Salt Range:—

"Lay in the third week of August. Eggs, five. Shape, round pyriform. Color, pale grey, closely freckled with dirty yellowish ochre, with a few dots of neutral, and blotched with deep reddish brown or blackish umber. Nest, a little grass, hemp, yarn, and a few hairs on the ground in a field of the bajra."

The eggs of this species are very similar to, but much smaller than those of, *T. pugnax*; they are even smaller (markedly narrower) than those of *joudera*.

They are moderately broad ovals, much pointed towards one end, and very fairly glossy. They have a pale yellowish stone-colored ground, minutely freckled all over with specks of yellowish and greyish brown, overlaid with somewhat larger streaks, spots, and mottlings of dark earthy brown, varying in shade in different eggs, and often much more dense towards the large end, where in some they form a sort of mottled irregular cap. Small spots or clouds of pale inky purple are usually scattered amidst the other markings.

The eggs that I have seen have only varied from 0·84 to 0·88 in length, and from 0·65 to 0·68 in breadth.

836.—*Eupodotis Edwardsii, Gray.*

The Indian Bustard is tolerably common throughout the dryer, wilder, and more barren portions of Central India, Kattywar, Cutch, Rajpootana, and the Punjab. It lays mostly in July and August, but the breeding season varies a good deal according to the rainfall, and we have found eggs as early as the first-half of March and as late as the first-half of September. The eggs are placed on the ground, at the base of some bush or tuft of grass, in a small depression, generally unlined, often thinly lined with a few straggling blades of grass. The situation varies; sometimes the nest is in an open waste, sparsely dotted with a few herbaceous shrubs, often in the stubble of the giant and bulrush millets, and still more often in clumps and patches of high thatching grass, or the dense soft lemon grass so characteristic of the favorite haunts alike of this Bustard and the Houbara.

My impression is that the birds lay only one egg. But sometimes two eggs are found pretty close together, and either the females not unfrequently lay very close to each other, or when a female does lay more than one egg she deposits the second some little distance away from the first. Khan Nizam-oodeen Khan has taken more than a hundred of these eggs with his own hand, and he never found two eggs side by side. Where, as not unfrequently happens, two are within a yard or two of each other, he believes that they belong to different birds, and that this is a fact he has in one or two cases proved by snaring both females. I have only myself seen three nests, each containing a single egg. I can, therefore, say nothing positive on this subject.

Khan Nizam-oo-deen Khan gives the following, which I translate, in regard to the dates on, and places in, which he found the eggs of this species in 1869 :—"The first nest, containing two eggs, was found on 30th June. The eggs were discovered in waste-ground rather high and dry, dotted over with tufts of a species of lemon grass. The eggs were overhung by one of these tufts, but curiously enough one egg was on one side, and the other egg was on the other side of the tuft.

"On the 1st July two nests, each containing one egg: these were both in waste-land, thickly covered with the plants of the Lana (*Anabasis multiflora*).

"Another nest, containing one egg, was found on the 3rd July amongst tufts of the lemon grass" (a species of *Cymbopogon*).

"Another nest on the 6th July, also containing one egg, was found under a Lana bush in some high somewhat stony waste-land, thickly dotted with the 'Khooee' or lemon grass tufts.

"Another nest, containing one egg, was taken on the 10th July, the egg being placed under a solitary Lana bush in perfectly level, open ground. Other nests were taken from similar situations.

"On the 11th July one egg.

"On the 27th and 30th July and the 23rd August in each one egg, and on the 10th and 27th of August nests, each containing two eggs, in each of these latter cases the two eggs being found at some little distance from each other.

"It seems very doubtful whether these two eggs in any case belonged to the same bird. In one case doubtless the eggs were only on different sides of a large tuft of grass, but in the other instances in which two eggs were found in the same locality they were several yards apart."

He also sends this further memorandum of eggs found in 1870 :—

" *No. of eggs.*	*Date.*	*Nature of locality.*
1	12-3-70	Grass jungle.
1	20-3-70	Jawar stubble field.
1	19-3-70	" " "
1	19-4-70	" " "
1	18-5-70	Bajra " "
1—2	27-6-70	Clump of thatching grass.
1	17-8-70	Khooee grass."

I should mention that the Khan Sahib took all these eggs in a circle of about twenty miles round Urneewalla, which is in the west of the Sirsa District, just north of Bikanir and Bhawulpoor, in both of which states some of the eggs above mentioned were secured.

The eggs of this noble bird vary very much in size and shape. They are all more or less oval; but while some are moderately broad and slightly pointed at one end, others are long ovals, exactly similar at both ends; and others again are long and cylindrical, of the same size and shape as the egg of the great Northern Diver figured by Mr. Hewitson; and I have one specimen that both in color, shape, and size might have been the one from which his plate of the egg of the European Bustard was taken. The shells are very thick and strong, closely resembling those of the Sarus in texture, and, like those of the latter species, the eggs very commonly exhibit pimples and rugosities at the large end, so much so that out of sixty eggs now before me only seven are perfectly free from such imperfections. Some of the eggs are dull and with little gloss, the whole surface being closely pitted with small pores similar to, but fewer than, those in the Peafowl's egg, while other specimens are brilliantly glossy. The ground color varies much. Typically it is a sort of drab color, but it is often earthy brown, pale olive brown, pale reddish brown, dingy olive green, and, although rarely, even pale leaden blue. The markings vary in extent, number, and intensity; sometimes they are pretty deep reddish brown and clearly-marked blotches, but more usually they are pale reddish brown clouds and streaks, sometimes so faint as to be mere mottlings, and sometimes, though rarely, altogether wanting. Occasionally the markings form an irregular blotchy cap at the large end.

As helping to give an idea of what the eggs are like, I quote here a description made on the spot before we blew them, of six eggs that we obtained on one day, and three of which I myself took:—

"The first of these is, the Khan says, rather an exceptional egg as regards coloring. It has a *bluish* green ground, thinly spotted and blotched with deep umber brown, and towards one end there is a pretty conspicuous zone of spots and blotches, most of the blotches here being of a pale purplish brown. The next egg is a very pale olive brown with more of a greenish than a brownish tinge, clouded, spotted, blotched, and streaked, but everywhere thinly, with brown, only slightly darker than the ground of the egg, but altogether of an umber tint instead of the olive of the ground. The next is a yellowish stone color, pretty thickly, but very faintly, clouded and streaked with a deeper and slightly redder tint.

"The next egg has but very little gloss, and is a nearly uniform dark olive brown with only the faintest traces here and there of streaks of a darker tint. The next is an excessively glossy egg of the same color, everywhere thickly clouded and mottled with a slightly darker and more ruddy shade of brown. The last egg is of much the same color as the preceding, but more glossy than the former and less so than the latter. There is a conspicuous cap of nearly confluent clouds and blotches of a redder brown than the ground of the egg, and streaks and blotches of the same color, but somewhat fainter, are scattered over the whole surface of the egg."

Out of sixty eggs in my collection no two are precisely alike.

In length they vary from 2·75 to 3·42, and in breadth from 2·05 to 2·45; but the average of sixty eggs is 3·11 by 2·24.

838.—*Sypheotis bengalensis, Müll.*

The Bengal Florican is almost confined to Eastern Bengal, and those portions of Bengal, Oudh, and the North-West Provinces lying north of the Ganges. Jerdon says that it spreads through the Valley of the Jumna into Rajpootana, the Cis-Sutlej States, and parts of the Punjab; but this is, I think, quite wrong. It is the Houbara that is found in these localities, not the Bengal Florican; but sportsmen constantly call the Houbara the Florican, and hence the mistake. I have never seen the true Florican anywhere west of the Kadir of the Ganges, except as a rare straggler in the Dhoon; and there again it does not, to the best of my belief, extend further west than the Kadir of the Jumna. In Meerut I have killed both the Houbara and the Likh, but it is only when you get quite down into the Kadir of the Ganges at Hastinapoor and Mukdoompoor, or again southwards below Gurmooktesur, that you meet the true Florican, and here we used to pick up a few couples every cold-season.

Mr. Hodgson's account of the manners and nidification of this species, derived chiefly from native huntsmen, is still the only one I know of. He says: "The Florican is neither polygamous nor monogamous, nor migratory nor solitary. These birds dwell permanently and always breed in the districts they frequent, and they dwell also socially but with a rigorous separation of the sexes, such as I fancy is paralleled in no other species. Four to eight are always found in the same vicinity, though seldom very close together, and the males are invariably and entirely apart from the females after they have grown up. Even in the season of love the intercourse of the sexes among adults is quite transitory, and is conducted without any of that jealousy and pugnacity which so eminently distinguish most birds at that period.

"In the season of love the troops of males and females come into the same neighbourhood, but without mixing. A male that is amorously disposed steps forth, and, by a variety of very singular proceedings quite analogous to human singing and dancing, recommends himself to the neighbouring bevy of females. He rises perpendicularly in the air, humming in a deep peculiar tone and flapping his wings. He lets himself sink after he has risen some fifteen or twenty yards; and again he rises and again falls in the same manner, and with the same strange utterance, and thus perhaps five or six times, when one of the females steps forward, and with her he commences a courtship in the manner of a Turkey cock, by trailing his wings and rising and spreading his tail, humming all the time as before.

"When thus, with what I must call song and dance, the rites of Hymen have been duly performed, the male retires to his company and the female to hers; nor is there any appearance (I have at some cost had the birds watched most closely) of further or more enduring intimacy between the sexes than that just recorded, nor any evidence that the male ever lends his aid to the female in the tasks of incubation and of rearing the young.

"The procreative instinct having been satisfied, the female retires into deep grass cover, and there, at the root of a thick tuft of grass with very little semblance of a nest, she deposits two eggs, never more or less, unless the first be destroyed. If the eggs be handled in her absence, she is sure to discover it and to destroy them herself. The eggs are of the size and shape of an ordinary domestic Fowl's, but one sensibly larger and more richly colored than the other. This larger and more highly tinted egg is that of the male young, the smaller and less richly hued egg that of the female progeny.

"The female sits on her eggs about a month, and the young can follow her very soon after they chip the egg. In a month they are able to fly; and they remain with the mother for nearly a year, or till the procreative impulse again is felt by her, when she drives off the long-since fully grown young. Two females commonly breed near each other, whether for company or mutual aid and help; and thus the coveys,—so to speak, though they are not literally such,—are usually found to consist of four to six birds. The Florican breeds but once a year in June-July, that is, the eggs are then laid, and the young hatched in July-August.

"The eggs, about the size of those of a Bantam, 2 inches long by 1½ inch broad, are of a sordid stramineous hue, very minutely dotted and more largely blotched and clouded with black, somewhat as in *Lobivanellus goensis* or the Indian Lapwing."

According to his manuscript notes, the Florican breeds freely in the Terai below the Sikhim and Nepal hills. They lay from the middle of May to the middle of July, and lay two eggs, which are figured as measuring from 1·7 to 1·95 in length and from 1·35 to 1·5 in breadth. Three eggs are figured, each with the ground varying in shade,—the one is pink, the second brown, and the third an olive stone color, and they are blotched and freckled all over, or speckled and clouded, with dark brown.

839.—*Sypheotides aurita, Lath.*

I have never myself found a nest of the Likh, but I have enquired much in regard to their nidification. Although during the winter and spring this bird strays all over India, the vast majority breed in the western half of the Peninsula, between 15° and 25° north latitude, rarely extending eastwards of 78° east longitude.

October and September are the months in which most eggs are to be met with. I have never had any authentic account of more than four eggs being found in any nest.

Writing from Sholapoor, last spring, Mr. Wenden, to whom I am greatly indebted for the trouble he has taken in procuring and sending me eggs and information, and getting others to do likewise, remarked : " The eggs I send you were taken here last September. The nest was placed between the roots of several tufts of tussock grass growing in black soil and in the intermediate space. The soil not being held up and protected by roots had been washed out or had sunk from the effects of rain, and thus a natural basin had been formed. In this the bird had excavated a saucer-shaped hole, perhaps 4 inches deep and 9 inches in diameter, the bottom of which was bare. Round the edges was a slight fringe of grass, which had not so much the appearance of having been placed there by the bird for any purpose, as it had of being simply scraped away from the actual sitting place. The nest contained three eggs."

He now (November 1874) writes to me : " My *Phansee Pardees* (native fowlers) found the first nest (if it can be so called) of the season on 15th September, with one egg; an egg was added on the 16th, and another on 17th; and on the 19th finding no more eggs, I shot the male and female, and took the eggs. I send them to you, together with the skins of two other birds, and another batch of four eggs taken from another nest on the 5th October. The last nest I have heard of being found was taken on the 27th October, but I could not unfortunately procure the eggs.

" The nest taken on the 19th September was the only one which I had an opportunity of watching. The eggs were deposited on the bare ground, which was perfectly level (without the least signs even of scratching), in some thin scanty grass about 2 feet high, and about 2 yards in from the edge of the grass patch. Not a hundred yards from the plot of grass in which the eggs were deposited is a *Kurán,* (or preserve) over half a mile long by quarter broad, of very high dense grass, a far more likely place, one would have thought, for so wary a bird to lay its eggs.

" On the 16th, I went out and watched this bird for more than an hour, just about the time at which she had been flushed on the morning before from the single egg. From the tree on which I sat, with my binoculars, I saw her running rapidly out of the dense *Kurán,* across the open and into the scanty patch in which was her egg. Here she moved about for some minutes feeding, and every now and then she sprung into the air with a low clucking cry, which was answered by the male bird from the dense *Kurán,* though at first I could not see him. Then, as though a sudden thought had struck her, she darted to the nest, and after one or two springs and walking round and round the egg, she squatted and deposited another. While she sat, she was quite silent, but the male bird who had now advanced closer to me kept springing in the air and crying continually. The operation of laying the egg seemed to last about twenty minutes,—*i. e.,* from the time she sat to the time she rose—and having made another spring or two, walked round the eggs and then made straight tracks for the dense grass where the male bird was calling.

“ I went out quite alone on this watching expedition and all was quite quiet, and the birds were at their ease; but while I was still in the tree a man came into the *Kurán* with some cattle, and then I saw both birds spring several times *silently,* and after that I saw or heard nothing of them.

“ I can tell you no more of the breeding habits of this bird, except that Mr. Davidson writes me that he has secured three nests, containing one, four, and three eggs, respectively, several of which he has sent you. He adds: ‘Three ‘ young Florican, one only half out of the egg, were brought to me yesterday ‘ (25th October). An almost uniform dirty pale yellow color, with an unclosed V ‘ (*i. e.,* \/) on the crown of the head in *dingy* black, and blotches, rather stripy, ‘ of black on wings, back, and sides, and about the ears. Legs and beak, a ‘ color between pale blue and pale pink; and on the tip of the beak a little ‘ lump of pale pearly white.’ In a postscript to his letter, he says: ‘The ‘ *Phansee Pardees* have just brought in three more fresh Florican eggs.’ ”

Mr. J. Davidson, C. S., tells us that “ the Florican breeds all round Sholapoor in considerable numbers, wherever there are *Kuráns* (grass preserves) with long grass. During the breeding season they seem chiefly to haunt the thinnest patches of long grass, rather than those full of small bushes; they are at this period exceedingly difficult to flush, particularly the hens, which, even if you succeed in forcing them to rise, get up only at your very feet and make but very short flights. The cocks are not quite so difficult to flush, but you are obliged to run towards them, even to get them up: if you simply walk after them, they will rarely rise. Their whereabouts is, however, generally easily discovered by their frog-like call, and their occasional sudden jumps up into the air. They do not seem to call much when the sun is bright, but chiefly in the morning and during cloudy days. I have often watched them flying or jumping up, but I am still uncertain why they do it. My original impression was that they sprung up to seize insects from the grass stalks, but I have long abandoned this idea as they rise much above the grass. Moreover, I have only seen one bird thus rise, that could have been a female, and this was dark-colored, and probably a male that had not assumed breeding plumage, and I am inclined to consider these sudden flights, as simply one of those bridal displays, so common in the males, especially of gallinaceous birds, such as the flapping of the wings in Pheasants, the nautch of the Peacock, the lêk of the Capercailzie, and the pouch-inflated strut of the Big Bustard, and if it can be certainly established that this habit is confined to the males, no alternative solution seems open to us.

“ The nests are exceedingly hard to find, and I have only managed to secure eight eggs belonging to three nests; they differ very much in size, ground color, and markings.

“ The first nest I found contained a single fresh egg, which I took on the 21st September.

"The second, which I found on the 5th October, contained four slightly-set eggs (all four being of the same size and markings).

"The third nest I found on the 7th of October; it contained three eggs of two very different types, and all slightly set.

"The nests were like those of the Great Bustard's, mere (I can hardly call them even hollows) spaces among the thinnish long grass."

Lieutenant F. Alexander writes: "The hen Florican commences to lay in Sholapoor and its environs about the middle of September. The eggs are from three to five in number; almost always placed near water, and not, as a rule, in very long grass. The mating season commences at the close of August or the beginning of September, at which time the male bird commences to jump in the grass; this jumping is almost entirely confined to the male bird, and ceases as soon as the mating season is over. The males are easily killed at this time, as the act of jumping is always accompanied by a call (very like a frog's croak), and they can be followed thereby; but as soon as you have approached within a reasonable distance, and have once caught sight of the bird, you must run at him as hard as you can, as they do not often jump in the same spot twice, unless accompanied by the female. I was fortunate enough to shoot six in this manner, in full black plumage.

"A nest of the Florican that I found on the 20th September was on bare ground; the spot chosen was slightly cup-shaped, and was hedged in by grass about a foot in height."

In his note on birds in the Dekhan, Lieutenant Burgess tells us that "the Florican breeds during the end of the monsoon, laying three eggs of a dark olive green color, spotted and dashed with light brown, 1·9 inch in length by 1·5 inch in width; the greatest width being about the centre. The egg now sent was procured with two others early in September."

Dr. Jerdon remarks: "A few birds appear to breed in all parts of Southern India from July to November, for I have put the hen bird off her nest in August in the Dekhan and in October near Trichinopoly, and have heard of the hen having been found incubating still later, up to January indeed; but the majority breed in Guzerat, Malwa, and Southern Rajpootana, from July to September. I have found the cock bird commencing to assume the black plumage at the end of April, and have killed them with the black ear-tuft just beginning to sprout, hardly any other black feathers having appeared. In other instances, I have noticed that these ear-tufts did not make their appearance till the bird was quite mottled with black. The full and perfect breeding plumage is generally completed during July and August. At this season the male bird generally takes up a position on some rising ground, (from which it wanders but little, for many days even, and during the morning especially, but in cloudy weather at all times of the day,) every now and then rises a few feet perpendicularly into the air, uttering at the same time a peculiar croaking call, more like that of a frog or cricket than that of a bird, and then drops down again. This is probably intended to attract the females, who before their eggs are laid wander greatly, or perhaps to summon a rival cock; for I have seen two in such desperate fight as to allow me to approach within thirty yards before they ceased their battle. The female lays her eggs in some thick patch of grass, four or five in number (one writer says seven) of a dark olive color, with or without a few darker blotches, of a very thick stunted ovoid form, very obtuse at the larger end. During this season the females are very shy and wary, seldom rising, though often running great distances, and when closely approached and unable to run further perhaps without being seen, squatting so close as to allow a man or dog almost to tread on them before they take flight."

The eggs, for a magnificent series of which I am indebted to Messrs. Wenden, Alexander, and J. Davidson, like those of the Great Bustard (which, though smaller, they greatly resemble), vary much in size, shape, and coloration.

Typically they are very broad ovals, with a feeble tendency to a point at one end; but some are nearly spherical, some are purely oval, while one or two approach a Plover shape.

The shell everywhere closely pitted with minute pores is stout, but smooth, and has always a slight, and at times a brilliant, gloss.

The ground color varies from a clear, almost sap green, through various shades of olive green, drab and stone colors, to a darkish olive brown. I have seen no specimens exhibiting the blue and bluish grounds, occasionally met with in the eggs of the Great Indian Bustard.

The markings are brown, reddish or olive brown, occasionally with a purplish tinge, in some very faint and feeble, obsolete, or nearly so, a mere mottling; in others conspicuous and strongly marked; but in the majority neither very faint nor very conspicuous. In character they are generally cloudy streaks, more or less confluent at the broader end, (from which they run down parallel to the major axis,) and more or less obsolete towards the smaller end. Occasionally, however, they are pretty uniformly scattered over the whole surface of the egg.

In size the eggs vary from 1·77 to 2·06 in length, and from 1·5 to 1·7 in breadth; but the average of twenty-three eggs is 1·88 nearly, by rather more than 1·59.

840.—*Cursorius coromandelicus*, *Gmel.*

The Indian Courser breeds commonly in dry, open, more or less bare and moderately watered, tracts throughout Southern, Central and Central Northern India. Eastwards, in Bengal, Assam, &c., it does not, I believe, breed, and occurs but very rarely; while westward, in Continental India, it is more or less entirely replaced by *C. gallicus*.—The latter does not stray much into tracts where the rainfall exceeds 15 inches, whereas our present bird, both north and south, belongs to the 15-to-45 inches zones and plateaux.

I have found the nest twice in June, and once in the last week of March. I believe, however, that the bird lays from March to July. It scrapes a slight hollow in the ground, at times in a bare plain; oftener, I believe, under some tuft of grass or low bush, in stunted, straggling, dry upland jungle, and in it lays two or three eggs on the bare earth. I have never seen any lining, nor have I known of more than three eggs being found; but my experience has been limited.

Mr. H. Wenden writes: "A few of the Indian Courser breed about Sholapoor in May and June *chiefly*, but some later on.

"On June 30th, I found a nest of two eggs, hard-set, one with a single fresh egg and another with three fresh ones.

"On July 4th, I saw a batch of three young, and another of two.

"The eggs are deposited on the ground, without the slightest signs of preparation in the shape of a nest, and in the barest and most open plain."

Dr. Jerdon states that "it breeds in a hollow in the ground from March to May, laying usually three eggs of a pale greenish yellow color, much blotched and spotted with black and with a few dusky olive spots."

The eggs of this species seem to average slightly broader and possibly somewhat more brightly colored than those of *C. gallicus,* but they are in other respects very similar to these. The ground color varies from cream color to bright buff. The markings are most complicated. There are first large clouds, or patches, spots, and blotches, and smears of a very pale inky grey, sometimes occupying nearly the whole surface of the egg, at times only a small portion of this; then above this are lines, scratches, spots, and occasionally streaks of blackish brown or black and a rich olive. These markings are mostly small, niggling, and close set, with here and there big, clumsy, inky-black smears or smudges intermingled.

Elsewhere I have thus described them :—

"The eggs are very spherical and perfectly glossless. The ground color is a yellowish stone color or fawny white, and they are closely mottled, spotted, and in some specimens lined all over with dull blackish brown and pale inky purple. In some eggs the markings are denser and darker, in some they are comparatively well defined, and in others they are confused and cloudy. These eggs so closely resemble those of *C. gallicus* that it would be difficult to separate them."

In length the eggs vary from 1·14 to 1·26, and in breadth from 0·93 to 1·02; but the average of a dozen is 1·19 by 0·97.

840 *bis.*—*Cursorius gallicus, Gmel.*

I believe that the first really authentic eggs of the Cream-colored Courser ever obtained were those procured for me in 1868 by Khan Nizam-ood-deen Khan, the well-known Punjab sportsman in the neighbourhood of Urneewalla in the western portion of the Sirsa District. I quote the note I published at the time on the subject :—

"When shooting with the Khan in the Sirsa District; I shot a *Cursorius gallicus.* He then told me that there was another species which he described, and of which he some days later procured a specimen, and which proved to be *C. coromandelicus.* He told me that the former bred in the desert portion of the Sirsa District, but that he had never seen the eggs of the latter, which was there a comparatively rare cold-weather visitant.

"I particularly asked him to watch for the eggs of both species and obtain them if possible. In course of time he wrote that he had obtained a pair of birds with one egg, and later that he had obtained two more pairs with two eggs each.

"He sent me the five eggs and the three pairs of birds, all *C. gallicus*; and he certified that in each case he had himself seen one or other of the birds actually on the eggs before touching them, and had himself shot the old birds in each case, which, tame as the birds there are, was a matter of no difficulty. He had procured other similar eggs, but as they had been brought in by others, he could not speak to them for certain and did not send them.

"Now, these eggs could have been laid by no other known bird belonging to the Sirsa *avifauna* with which I am well acquainted, except perhaps the *C. coromandelicus,* of which I was equally anxious to obtain eggs, and which are far rarer in Sirsa than *C. gallicus;* and putting this aside, all who know the Khan Saheb will, I know, agree with me that he is absolutely reliable.

"He found all these eggs in July.

"They were in each case laid on the bare ground in a very trifling depression; in one case in a perfectly bare plain, in another in barren ground thinly studded with stunted tufts of coarse withered grass, and in the third in an undulating sandy tract, which might be called a desert but for numerous bushes of the Lana *(Anabasis multiflora)*, and the Ak *(Calotropis Hamiltoni)*.

"The eggs are not, except in shape, at all like the one figured at page 76 of the Ibis for 1859. They are *colored* just like a Plover's, but have not the somewhat pyriform shape common to those Plovers which breed with us. They are more like those of the Stone Plovers, *Œdicnemus crepitans* (possibly ours should stand as *indicus*, Salvadori) and *Esacus recurvirostris.* But proportionally to the size, the markings are closer and finer, and cover more of the ground in all five of the Courser eggs than in any of my large series of *Œdicnemus* and in any but one of my still larger series of *Esacus.* All five eggs are very much alike, but the markings are rather more dense on the two found in the second nest than in the other three.

"The plate in the Ibis (at any rate in my copy) shows the ground color a pale buff or light stony yellow correctly enough, but it gives the markings as orange and reddish purple, whereas in all my eggs the markings are Indian ink of two shades, with here and there a shade of deep olive brown intermingled.

"Moreover, the character of the markings on my eggs is in no way reproduced in Mr. Hewitson's figure. In my eggs the ground is very *densely* mottled over with irregular blotches, mostly small spots, specks, streaks, and lines of black, all connected more or less together at one point or another; while underlying these, as it were, and occupying much of the interspaces, are spots and tiny clouds of the pale Indian-ink tint. Here and there the black, looked at intently, is seen to have a deep olive brown tinge, and some particular spots and lines are pure olive brown; but the general effect produced is that of a pale dingy buff ground, densely mottled and freckled with dull black. The eggs, though smoother than those of the Plover's and the Pratincole's, have no gloss. In shape they are very broad ovals, *slightly* pointed towards one end. The drawing in the Ibis measures 1·33 by 1·09. My eggs measure only 1·1 to 1·2 by 0·92 to 0·95."

Since this appeared, the Khan Sahib has taken nearly one hundred eggs of this species, and I have myself visited his domains and taken more than a dozen with my own hands. There is, therefore, now no possibility of a doubt as to the authenticity of these eggs, and I confess that, this being the case, I can only believe in the authenticity of the eggs sent to Mr. Tristram, on proof that our Indian Cream-colored Courser is different from the African one. This seems to me quite possible; the only African specimen I have examined was too bad a specimen to enable me to decide positively, but so far as it went I could detect no difference.

The eggs I found placed in situations precisely similar to those in which, in the North-West Provinces, I had found the nests of *C. coromandelicus.* July was the month in which I found them, and it is in this month generally that the great bulk *are* found; but the Khan has taken them *from* the middle of March to the middle of August, and the laying season varies a good deal according to the rains.

The following is an extract from the Khan Sahib's diary for 1870, showing the dates on, and situations in, which he found nests in that year, and the number of eggs in each nests :—

No. of Eggs.	Date.	Nature of locality.
2	14-3-70	Bajra stubble.
1	28-4-70	Under bush close to Urneewalla perao.
1	8-5-70	Bajra stubble field.
2	13-6-70	Lemon grass.
3	19-6-70	On low sandy land near the Sutlej.
1	20-6-70	Waste-land.
2	23-6-70	Scrub jungle.
2	26-6 70	„ „
1	1-7-70	Clump of grass.
2	1-7-70	Low jungle.
1	3-7-70	Amongst some oopla in jungle.
2	5-7-70	Jungle.
2	5-7-70	Jungle.
2	8-7-70	Amongst low grass.
2	8-7-70	Low jungle.
2	10-7-70	„ „
2	13-7-70	„ „
2	18-7-70	Cultivated land.
1	22-7-70	Open waste land.
1	22-7-70	Low jungle.

The nests, he tells me, have always been small hollows, 3 to 5 inches in diameter and at most 2 inches in depth; generally bare, at times with a slight lining of dry grass, which may have been placed there by the bird or may have lodged there accidentally. Three is the greatest number he has yet found in any nest, and this only exceptionally. Two he considers to be the usual complement.

Typically the eggs are very broad ovals, only very slightly compressed towards one end, but here and there somewhat more elongated examples occur. Except that the ground color is yellower and more buffy, many of the eggs, both as to shape and markings, appear perfect miniatures of some of the varieties of *Esacus recurvirostris*. They have, of course, no gloss. The ground color is pale buff or creamy stone color, and the most characteristic feature in the egg is the huge, dull, half-washed-out inky clouds which underlie the brighter or primary markings, which latter vary from black to olive brown.

In some eggs the secondary markings cover half or more than half the surface of the egg, and are sooty black; in others they are not only smaller but much less conspicuous, being a faint inky purple. Typically the primary markings are very niggling in their character, a combination of specks and spots and fine irregular lines, some black or blackish brown, some olive brown, thickly sown over the whole surface of the egg. Not unfrequently, however, some few amongst the markings are bolder and coarser, and stand out more or less conspicuously from the general scratchy mottled mass of markings. In some eggs the olive brown is wholly wanting, and in one egg before me the only representative of the primary markings are a number of large blotches and spots of a very rich olive brown. Occasionally the secondary and primary markings are so dense that between them almost every particle of the ground color is concealed. Some of the eggs not a little resemble those of *Glareola pratincola* both in size and appearance, but the majority are larger and have smaller and more niggling markings than the eggs that I have seen of *G. pratincola*.

The eggs vary very much in size, from 1·1 to 1·28 in length, and from 0·9 to 1·04 in breadth; but the average of fifty eggs carefully measured is 1·2 by 0·96.

842.—*Glareola orientalis, Leach.*

I have been unable to ascertain anything in regard to the nidification of the Eastern or Larger Swallow Plover. Mr. Blyth, however, tells us that "it breeds sometimes in the neighbourhood of Calcutta, where I have seen two or three brought to the provision bazaar too young to fly. A specimen, with the feathers half-grown, is mounted in the Calcutta Museum, and another which must have been bred at no great distance."

Mr. Oates remarks: "Though I have not found the nest of this bird, yet I am confident that the bird breeds in large numbers in the plains of Pegu. I first observed it in March, from which I should judge that it is a summer visitor only. In April it became very abundant, and the generative organs of both sexes were highly developed.

"This Glareole is gregarious, parties of twenty or thirty choosing a locality and remaining there. Sandy and hot places are chosen in preference. During April and May I several times, in company with friends, carefully quartered several acres of ground, but failed to find anything. When their breeding haunts are invaded, many of the birds (females I suspect) squat on the ground, expand their wings, stretch out their necks, and try to look as fierce as possible. There is no manner of doubt, I think, that these birds breed abundantly in the Pegu plains. Next year I hope to be more successful. I cannot help suspecting, (knowing as I do from dissection that the birds were breeding in April and May), that the female covers the eggs with a sprinkling of sand or dry decayed vegetable matter when she is disturbed. The curious habit of squatting for a few moments with expanded wings requires investigation."

843.—*Glareola lactea, Tem.*

The Lesser Indian Swallow Plover breeds on sand-banks throughout the Indus, Ganges, Brahmapootra, Irrawaddy, Nerbudda, and Mahanuddy, and their many affluents, so far as they continue to be broad streams, flowing peacefully when not in flood. To which others (if any) of our Indian river systems they resort to breed I do not yet know. Further information on this subject is much to be desired.

It is always a social bird, and, even in the breeding season, from ten to fifty pairs always keep together.

Like the European Pratincole in Greece and elsewhere in Southern Europe, our Indian Swallow Plover always breeds in company with various species of Terns; with these latter it usually chooses a low flat sand-bank in the middle of the river, if possible one never visited, and in some part of this, not intermingled with, but usually a little apart from, the Terns, it makes its nests, the whole party of Pratincoles laying within a very limited area. Sometimes, but more rarely, the terminal portion of some very long and unfrequented spit of sand is taken possession of, instead of a sand-bank island.

The nests are mere holes in the sand, three inches or so across, and an inch or an inch and a half deep. Where the bank is absolutely unfrequented and unvisited, there these holes are scratched in the open without the slightest attempt at concealment; but where boatmen towing boats are passing from time to time, there the birds generally make their nests at the roots of, and partly concealed by, tufts of grass or Tamarisk bushes.

The nests are never lined in any way.

Four is the full number of eggs; but three, and even two, are often found much incubated. So long as there are only two or three in the nest, and the birds have not commenced to sit regularly, they do not seem to care whether you rob it or not; but directly they commence sitting they evince the strongest interest in the matter, and do all they can to entice you away from the eggs.

In the North-West Provinces I have always taken their eggs in March. They are later, however, in the Punjab, and at Thayetmyo Mr. Oates found them beginning to lay on the 12th April. I shall now quote a couple of my old notes in regard to the nidification of this species:—

"We found a small party of these birds breeding on a low bare sand-bank in the Jumna, near Sheregurh (Etawah) on the 12th March. Near it the Skimmer, Large River and Black-bellied Terns also had nests. Several of the eggs were partly incubated; the nests in which we found these latter contained each three eggs, but the majority had as yet only one or two eggs each, so that I fancy they had not long been breeding. They did not to me appear at all anxious about their eggs, ran and flew off without uttering a sound when we got near, and only one or two of them, the sitting birds, returned (when we drew off apart to watch them) to look after their nests. Moreover, whilst we were actually collecting their eggs, they were flying about busily hunting flies and other insects, just as if they had no concern with the eggs. Like the Terns they lay in a little cup-like cavity which they scoop in dry sand. There seems never to be the least trace of any kind of lining, nor any decided attempt at concealment. There were plenty of tiny bushes of Jhao (*Tamarix dioica*) and herbs scattered sparsely here and there, but they took no advantage of any of these. I suspect that in the case of these and other birds the warmth generated by the sun on the white sand has a good deal to do with hatching the eggs and makes up for the irregular way in which the parent birds seem to sit.

"The ground color of the eggs varied from pale green to a sort of stone color, freely spotted and lined with brown of different shades in different eggs, and with more or less of secondary markings, somewhat as if below the surface of the shell, of a sort of dull faint purplish brown, which in some eggs are of considerable extent. On the whole there is perhaps a tendency for the markings to be most extensive towards the large end. The eggs are rather pointed, and measured from 1·0 to 1·12 in length, and from 0·78 to 0·84 in width. They were, as above remarked, mostly fresh. Sometimes the eggs are very deficient in color; I have often taken them so. One before me is white with an almost imperceptible greenish grey shade and only just a few feeble specks and spots of pale purplish brown. It measures 0·97 by 0·81."

Again I have noted:—

"I found an enormous number of the eggs of this species on the 28th April on a sand-bank in the Chenab near Wuzeerabad. On the 6th I had examined the same bank and found only one single egg. On the 28th, besides eggs, I found numerous young ones. This species, like the Terns, &c., which breed more or less in company with it, lays much later in the Upper Punjab than in the North-West Provinces, but in both places the Swallow Plover is first to lay.

"Although many of the eggs were placed in tiny depressions in the bare sand, open to the view from all sides, by far the majority were placed at or near the roots of tiny Jhao bushes *(Tamarix dioica)*, a foot or two only in height and diameter, which partially concealed them.

"Plover-like, four seemed the full number of eggs, but in several cases three, and even two, were found to be much incubated. The birds in no instances sat on their eggs, though one of the pair usually sat near them. I was searching the bank at about 2 P. M., and then the glittering white sands were too hot to allow the hand to be kept on them, while even the boatmen complained that the hardened horny soles of *their* feet were blistered by the heat.

"The strange antics played by these little birds, at least those of them that had young or hard-set eggs, whenever we approached their treasures, were very remarkable: flying past one, they would come fluttering down on to the sand a few paces in front of one, and there gasp and flutter as if mortally wounded, hobbling on with draggled wings and limping legs as one approached them, and altogether simulating entirely helpless and completely crippled birds. No one unacquainted with the habits of this class of birds could have believed to see them flapping along the sands on their stomachs, every now and then falling head over heels and lying quite still for an instant, as if altogether exhausted, that this was all a piece of consummate acting intended to divert our attention from their nests. I have seen Peewits and other Plovers behave somewhat similarly, but these little Pratincoles seemed to me to be cleverer performers than any birds I had ever seen.

"On the 9th April I had taken a few fresh eggs of this species off a bank in the Jhelum near Jellalpoor, but the birds at that time showed little anxiety about their eggs, of which we in no case found more than two in any one depression."

The eggs of this species appear to differ very widely from those of the European Pratincole. The eggs of this latter are more of the Plover type, and remind one very strongly of those of the Cream-colored Courser, whereas those of the present species are, at any rate in the character of their markings, more closely related to those of the Terns in whose company they breed, than to those of any of the Plovers. The eggs are typically broad ovals, pointed at one end; the shell is close, but somewhat chalky in its texture, and entirely devoid of gloss. In the color of the ground, as in that of the markings, an extraordinary diversity exists. The two commonest ground colors are pale greenish white and pale fawn color; but buff, reddish brown, pinkish grey, and white grounds are all common. The markings are of two kinds,—the one which we may call the primary markings are spots, specks, streaky blotches, and hieroglyphic-like lines of various shades of olive and reddish brown; while the secondary markings, which appear to underlie the former, are fainter or brighter purple streaks or clouds. Owing to the comparative predominance of one or other of these two principal forms of markings, and to the diversity in their characters, so many different combinations result that practically it is scarcely possible to pick out two eggs that closely resemble each other, although there is a general sameness in them and an especial character about them which prevents their being mistaken for those of any other species with which I am acquainted.

The eggs vary in length from 0·95 to 1·18, and in breadth from 0·78 to 0·88; but the average of sixty-two eggs is 1·05 by 0·82.

845.—*Charadrius fulvus, Gmel.*

Dr. Jerdon states that "many breed in this country, even towards the south, as at Nellore, but some appear to pass northwards for that purpose and to return in September. The eggs are four, of the usual yellowish stone color, with dark brown spots and blotches."

I believe this to be an error. I can obtain no reliable information in regard to the nidification of this species in India. The egg and nest sent me by Mr. Rainey, (STRAY FEATHERS, Vol. I, p. 228,) as belonging to this species, pertain, I have satisfied myself after careful comparison, to the Painted Snipe. Dr. Jerdon may be right, (and if anybody knows, and can prove that he is so, let him speak up,) but to err is human, and my, present impression is that in this particular matter our "guide and teacher" illustrated his humanity, and, by quoting, as he always does without acknowledgment, from some unreliable authority, has misled us. The description of the eggs seems to be taken from Yarrell.

We know that this species breeds in Formosa and throughout Siberia up to 74° north latitude at least, and again as far south as Yarkand. There are also grounds for believing that it breeds in some of the Thibetan lakes, but I have in vain sought to obtain the smallest evidence of its breeding south of the first Snowy Ranges of the Himalayas.

As to what the nest and eggs are really like, I may, though contrary to my rule in this work, quote what Swinhoe says of these in his FORMOSAN ORNITHOLOGY :—

" Common with us all the year round, breeding in great abundance on the south-west marshy plains. Its eggs, four in number, are laid in a loose nest of dried grasses and fibres placed in a hollow. They are of a yellowish grey ground color, blotched and spotted with deep blackish sepia, and have occasional obsolete purplish grey spots. They do not vary much in size, are narrowed at the end, and measure 1·5 by 1·1."

846.—*Cirrepidesmus Geoffroyi, Wagler.*
847.— „ *mongolicus, Pallas.*

Of these two species, the Greater and Pallas's Shore Plovers, all I can say is that to my certain knowledge they breed in May or June about the Tso-mourari, Tso-khar, and other Thibetan lakes. I have seen numbers of the young, and have, I fear, eaten the eggs; but this was twenty-four years ago, when I knew no better, and I therefore humbly hope to be forgiven, and to live to revisit these grand breeding haunts of so many of our Indian winter visitants, and make amends for past neglect.

848.—*Ægialophilus cantianus, Lath.*

Of the nidification of the Kentish Plover in India Proper I have no knowledge, but Mr. W. V. Legge, writing from Ceylon, remarks of this species: " I have lately discovered that the Kentish Sand Plover, not hitherto known to breed in Ceylon, nests in great numbers on the banks of the salt pans in the south-east portion of the island. The nests are made on the flat foreshores of these extensive sheets of water, and are placed on little mounds of broken shells. They consist merely of small cup-shaped hollows, bottomed with small fragments of shells and contained, as a rule, three eggs. I found all my nests between the 30th of June and the 14th of July, and at the former date young were to be seen running about, while many eggs were fresh, others partly incubated, and others almost wholly so. This would make the commencement of the breeding season to be the early part of June.

"The eggs varied in shape and character of marking, being in most instances of a greyish olive, while others were of a greener hue; this latter color always fades however; often the specimen is brown, and the shell becomes of an olive stone color. The general form of the egg is pyriform, but some are to a certain degree ovate in their shape. The most general character of marking is pencil-like spots and scratches of bluish grey and very dark sepia, the latter being of course the more abundant and *above* the grey markings, the direction of the strokes being diagonally across the surface, and at the obtuse end they are longer than in other parts.

"I give the following *résumé* of the different varieties observable among my specimens:—

(*a*).—Axis 1·21; Diam. 0·85. Ovate in shape, greyish olive ground, marked thickly as above.

(*b*).—Axis 1·25; Diam. 0·89. Pyriform in shape, of the same ground as (*a*) and with the same markings.

(*c*).—Axis 1·23; Diam. 0·89. More olivaceous than the above; pointed ovals in form.

(*d*).—Axis 1·2; Diam. 0·92. Pyriform, of an olivaceous ground color, and sparingly marked with bluish grey and dark sepia in their touches.

"The nestling has the upper surface fulvous, with black markings and lines on the head; down the centre of the back is a black stripe, bounded on either side by black markings. Iris, brown; bill, black; legs and feet, sickly olive green."

These dimensions fall short of those of European specimens which I have examined, and which varied from 1·25 to 1·64 in length and from 0·9 to 0·96 in breadth.

Two of these eggs, sent me by Mr. Legge, measure respectively 1·23 and 1·2 by 0·87 and 0·85, and therefore in dimensions correspond precisely with those of the next species, as, indeed, they do also in color, shape, and markings.

Mr. Legge also favored me with one of the old birds which he considers to have belonged to the eggs; it is clearly *cantianus*, but it is entirely in non-breeding plumage (though killed on the 7th July), without either black or rufous about the head. He also informs me that all the specimens killed by him at that time were similarly in non-breeding plumage.

The bird sent me is a young bird, a year old or thereabouts, and I cannot help fearing (every one who has taken the nests of this species in Europe knows how difficult, if not impossible, it is to catch them on their nests) that Mr. Legge's specimens may all have been young birds that remained behind, when their parents returned to their breeding haunts, and that the eggs which he attributes to them, in reality belonged to individuals of the next species.

849.—*Ægialitis fluviatilis*, *Bechst.*

I will not vouch for the correctness of the scientific name, but the bird I refer to is the Common Small-ringed Plover found all over India and Burmah, up the Mekran Coast, and at Muscat. Be its scientific name what it may, the Common Small-ringed Plover breeds pretty well all over India.

Dr. Jerdon says that "Burgess found them (in the Deccan) breeding in April on sand-banks in the middle of rivers, laying three eggs on the bare sand, of a rich stone color, spotted and freckled with grey and brown."

Captain Beavan remarks: "*Manbhoom, March.*—This Plover scrapes a hole in the sandy bed of a river in which it lays its eggs, making no regular nest."

Mr. F. R. Blewitt obtained the eggs on sand-banks in the Mahanuddy, near Sumbulpoor, in March and April. We once procured the eggs in the Chumbul in the Etawah District in April. They have been sent me from the Nerbudda, near Hoshungabad, in April. This species also breeds abundantly in the Jhelum in Cashmere, and Mr. Brooks gave me several eggs taken there at Islamabad on the 14th May.

About the nidification there is little to say, it is everywhere the same,—a tiny depression scraped, not far from the water's edge, in sand or very fine shingle, by choice on some water-encircled bank, occasionally on some unfrequented part of the river-bank itself. In this, on the bare sand or pebbles, four eggs are laid.

The eggs of this species are perfect miniatures of those of the Kentish Plover. They are of the usual Plover shape,—broad ovals, elongated, and pointed towards one end. The shell is very fine and compact, but there is scarcely any gloss. The ground color may be described as a drab, fawn, or buffy stone color, or pale *café au lait;* but it is sometimes a pale greenish grey, and the eggs are thinly speckled and spotted or marked with little hieroglyphic-like lines and figures of brownish purple, blackish brown, or black; while, besides these, secondary markings of a very pale inky purple, which appear to underlie those first described, are scattered here and there, sometimes very sparingly and sometimes pretty thickly, over the whole surface of the egg. Both primary and secondary markings vary a good deal in different specimens in intensity of color and in density; but, as a rule, the markings are most numerous towards the large end, where they at times form an imperfect and irregular mottled zone or even cap.

I have the eggs of this species, both from various localities in the plains and from Cashmere; some of those from the latter State are slightly larger, and some of them have the small end more elongated and pinched out, than any of those I have from other places.

The eggs vary in length from 1·1 to 1·23, and in breadth from 0·8 to 0·87; but the average of thirty eggs measured is 1·14 by 0·84.

851.—*Vanellus cristatus, Mey.*

Dr. Jerdon tells us that the Peewit breeds in the Punjab, and that the eggs were found there by Theobald.

I always suspected some mistake, because it seemed impossible that if this species laid in the Punjab, the eggs should never have been found by Captains Cock, Marshall or Unwin, by Messrs. W. or F. R. Blewitt, by Khan Nizamooddeen, or myself; so I wrote to Mr. Theobald about the matter; he says in reply:—

"I never remember taking the eggs of *Vanellus cristatus*, but those of *Sarciophorus bilobus* were once taken by me near Pind Dadun Khan, or perhaps on the Salt Range near Choya-Saidan Shah, as mentioned in my oological notes. I know nothing more of the matter, and certainly never said anything to Jerdon about it."

The fact is that, like many other good ornithologists, Dr. Jerdon did not care about eggs, and sometimes made mistakes about them, as in the case of the Marsh Tern (*vide infra* No. 984).

It is pretty certain that this species breeds nowhere south of the first Snowy Range, but Stoliczka took the eggs in Yarkand.

855.—*Lobivanellus indicus, Bodd.*

The Red-wattled Lapwing breeds throughout India, except in absolutely desert country, alike in the plains, and in the hills up to elevations of 3,000 or 4,000 feet.

The breeding season lasts from March to August, and I rather suspect that they have two broods; but I am not sure, for the great bulk of the birds lay in April, May, and June. Out of one hundred and twenty-two dated eggs in my collection, I find that the numbers indicated below were found in each of the months specified—

March.	*April.*	*May.*	*June.*	*July.*	*August.*
12.	46.	24.	28.	4.	8.

This does not look like two broods.

They lay almost anywhere, provided there is water somewhere in the neighbourhood. Banks of rivers, edges of swamps or ponds, well-irrigated gardens, are their favorite nesting sites until the rain falls; after the rains have well commenced they like dryer situations. It is very usual then to find their eggs amongst the ballast of a railway, (often in such a situation that the footboard of every carriage passes over the bird's head,) or on the top of a hedge-bank, in an old brick-kiln, or in any well-drained situation; in fact, a pair that had frequented my garden all the cold-season at Mynpooree laid on the top of my flat-roofed two-storied house, and hatched their young there, and the second day had the young down in the garden. How they carried them down the forty feet from the parapet of the roof to the ground I could not ascertain. These particular eggs had been kept in their places on the flat roof by a circle of fair-sized pieces of mortar, heavy enough to resist the strong winds which often in Upper India usher in the rainy-season. Very generally the eggs are laid in a simple depression in the earth, but not unfrequently the hollow is surrounded by a little circle of stones or a little ridge of sand. I have seen hundreds of nests but never one containing more than four eggs, and though people talk of finding six eggs in a nest I confess that I "hae mi douts."

I quote here two out of many notes that I have recorded about the nidification of this common bird:—

"On the 13th March we found six nests on the Jumna, two eggs in one nest and four in all the others. The so-called nests were only nearly semi-spherical depressions in the sand (just large enough to hold the four eggs), and were to a certain extent lined with tiny pieces of flood-deposited wood fragments, straw, and grass. It did not seem so much as if the nests were purposely lined with this, as that the birds had chosen to make their nests so as more readily to escape notice on one of the long dark lines of such stuff deposited earlier in the year when the river was higher and now left some three feet above its level. The nests, as I said, were depressions in the sand, but this sand was not part of a mere open sand-bank such as those on which we found the Skimmers', River and Black-bellied Terns' eggs, but some collected round and in amongst a large cluster of hard kunker rocks near Keontra, and, although *near* the southern bank of the river, separated from this by a channel and everywhere surrounded by water. Within fifty yards we found a dozen nests of *Esacus recurvirostris* and *Hoplopterus ventralis,* and closer still on a spot of level sand running out from the rocks a nest of *Seena aurantia.* The eggs of the Red-wattled Lapwing were, some quite fresh, some partly incubated; and they are slightly larger, longer, and more pointed than those of *Hoplopterus ventralis.*

"Going along the line at Etawah for about three miles on 14th August, we found five nests, one containing perfectly fresh eggs. Four of these nests were on the kunker ballast within two feet of the rail, so that the footboard of the carriages of every train must have passed over and within two feet of the sitting bird. The fifth was on the top of the boundary bank, the bird sitting totally unconcerned as our trolly passed within six or eight feet of it, and only moving when I walked up to the spot. Brooks tells me that along his fifty miles of line he has seen at least one hundred nests within the last twenty days or month."

Mr. A. Anderson remarks: "A pair of these Lapwings had taken up their quarters on the flat roof of the Opium Cutcherry at Mynpoorie, and they used to sit on the parapet of the verandah, evidently quite at home, though they certainly looked extremely awkward. Mr. Porcelli promised to get me their eggs from the house-top (for I had no doubt that they were like Mr. Horne's Peewits in this respect); but from all accounts the Crows used to eat them up as quickly as they were laid. It was not till the 11th May of the present year that Mr. Porcelli succeeded in sending me a complete clutch of four eggs; the birds had collected all the little pieces of loose mortar on the roof and made a raised-up nest. About a fortnight afterwards Mr. Porcelli sent me a *second* sitting of the same number; and in June he sent me a *third* batch of *three,* with the following note: 'On this occasion the first egg was laid, 9th June; the second, 13th June; and third, 18th June. All eleven eggs are the produce of one pair, for I have never seen more than two birds during the whole time I have lived in this house.'

"March would appear to be the most general month for this Lapwing to lay; but I have no doubt that some of them rear more than one brood in the year, as they lay occasionally all through the autumnal and summer months, and sometimes even during the cold-season."

From Sambhur Mr. R. M. Adam writes: "This species is very common. I have taken its eggs from March till July. The nest is a small hollow in the ground, without any lining; round the edge of the nest a few small stones are placed. A pair nested on the high-water level of the lake near to where salt had to be stored, and I have repeatedly seen the bird sitting on the eggs, although the natives were passing backwards and forwards within a yard of it. The young run about as soon as they are hatched, and when pursued try to make themselves look smaller, if that were possible, by squatting near a stone or piece of earth. The parents are equally frantic with grief and pleasure when they see the young caught and let loose again."

From Jhansi Mr. F. R. Blewitt writes: "The first four eggs I obtained here were taken on the 17th April 1868. Their brief history is a melancholy one, for I found them on the *identical* spot where, during the mutiny, the ladies and gentlemen of Jhansi were cruelly butchered.

"The birds breed well into July. The nest is a simple hole scratched on the surface soil, sometimes bordered with pebbles or gravel, and at other times with loose sand. The regular number of eggs is four.

"I never saw, as Jerdon relates, this bird congregate in 'flocks.' At the beginning of the cold-season only I have certainly seen the parent birds and their brood in company, otherwise the birds are almost invariably in pairs or single."

Writing from Kotagherry (Nilghiris), Miss Cockburn says: "The Red-wattled Lapwings are rather scarce up here, but they do occasionally breed even higher up than this (5,500 feet). During the breeding season they are exceptionally bold in the defence of their nests, so much so that I have known them attack a person who was taking their eggs, and have seen them drive away a dog which came too near their eggs or young. They also assault jackalls when guilty of the same presumption.

"They do not build any nest, but lay their eggs in slight hollows in a concealed spot. They lay from four to six eggs, which are sometimes very difficult to find from their great resemblance in color to the surrounding objects. They are always placed with the thin ends in the centre of the nest, and are chiefly found in the months of April and May."

The eggs of this species are of the typical Plover type,—normally broad and obtuse at one end and much pointed towards the other. Oval, truncated, and greatly elongated varieties occur, but the generality are very similar to those of the English Dotterel *(C. morinellus)*, both in size, shape, and appearance. If anything they average perhaps slightly smaller than those of this bird, and are, therefore, of course very considerably smaller than the Peewit's egg. The ground color varies of course as in all Plovers,—in some a clear pale olive green, in some a yellow, in others a reddish buff, while occasionally it is almost coffee-colored. The markings are intensely deep brown or black, and there are blotches, streaks, spots, and clouds thinly or thickly distributed over the whole surface. The endless variety in the color of the ground, and the extent, intensity, and character of the markings, renders any more exact description impossible; but I may note that, besides the primary markings, most of the eggs exhibit underlying clouds, spots, and streaks of pale inky purple. The eggs have scarcely any gloss.

Taken as a body, the markings of the eggs of this species are bolder and denser than in those of either *L. malabaricus* or *H. ventralis*.

In length the eggs vary from 1·45 to 1·85, and in breadth from 1·13 to 1·3; but the average of sixty-four eggs, (I have been too lazy to measure more,) is 1·64 nearly by a little over 1·2.

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855 *bis.—Lobivanellus atronuchalis, Blyth.*

The Red-wattled Burmese Lapwing appears to breed in suitable localities throughout British Burmah from Thayetmyo on the north to the Pak-Chan estuary on the south.

I have, however, only one egg of this species and one single notice of its nidification.

Mr. Davison, writing to me from the Tenasserim Provinces, remarks:—

"A few miles from Ye-boo, while passing over a plain covered with stunted bushes, and odd clumps of elephant grass partially burnt, (for there had evidently been a jungle fire there some eight or ten days previously,) I noticed several pairs of *Lobivanellus atronuchalis*, which, as we approached, rose with their well-known cry of "Dick! Did you do it?" but settled peaceably again after we had passed on a short distance; but one bird, instead of behaving like the others, kept running hither and thither, evidently very reluctant to take wing. I of course at once began to look about for a nest, making the men scatter, and do the same; the bird did not at all approve of this, and became more and more distressed. It was not long before one of my men found the nest, if it can be so called, containing one egg, quite fresh. The egg was placed in a slight depression in the ground, but there was no pretence of any nest, not even a few bits of dry grass. This was on the 10th of March."

The egg is of the usual type; a very broad oval, pinched and pulled out at one end and very obtuse at the other. The ground color is pale *café au lait* color, and it is pretty thickly blotched, streaked and variegated (most densely so at the large end) with very deep, almost blackish brown, as primary markings, while in amongst these numerous, small, more or less faint, clouds, spots and smears of pale inky purple, or purplish grey, are intermingled.

The egg measures 1·7 by 1·22.

856.—*Lobipluvia malabarica, Bodd.*

The Yellow-wattled Lapwing breeds throughout the plains of India in dry uplands. I have usually found the eggs in waste plains, known in Upper India as "*Oosur maidans*," rarely in ploughed lands, never on sand-banks or in the close vicinity of rivers or tanks. The bird is in India at all times a bird of the dry uplands, like the Norfolk Plover, and has none of the affection for damp or wet localities that so strongly characterizes most of our Plovers.

The bird is not anywhere, so far as I know, numerically abundant, and I find that in all these years I have only seen nine nests, and not one of my Indian correspondents have sent me a single line in regard to its nidification, so that I speak subject to correction.

According to my experience it lays in April and May. All the nests I have found were met with in these months. Mr. Brooks found a nest in Chunar in May and in Etawah in April. Mr. Buck got a nest in April in Cawnpore, Mr. F. R. Blewitt in Raipoor in May, and I have not yet heard of any one getting a nest at any other time of the year, but still I think it very possible that our bird *may* lay earlier and later.

On one or two occasions I have found the eggs overshadowed and more or less hidden by tufts of grass, but usually the nest is out in the open without any attempt at concealment.

The nest is a small circular depression scooped out by the bird and entirely unlined, some 3 to 4 inches in diameter and an inch in depth, and often with a little earth or a number of tiny pieces of kunker scraped up against the margin all round, so as to deepen the cup.

The eggs are always four in number.

Mr. W. V. Legge, writing from Ceylon, remarks of this Plover, that "it breeds in June and July, nesting on open ground near the shores of lagoons, salt lakes, &c." He says "I have found its nest near the sandy shores of the salt pans of Hambantota; it consisted of a hollow, stamped in the sandy ground, without any lining whatever; it was about a hundred yards from the edge of the water, and contained four pyriform eggs, less contracted at the smaller end than those of our Lapwing at Home, and of a rich stone yellow ground color, blotched evenly all over with three shades of sepia, the darkest blots being the largest; beneath these were spots of faded bluish grey. Axis, 1·48; Diameter, 1·14.

"Layard, in his notes contained in the ANNALS AND MAGAZINE OF NATURAL HISTORY for 1854, says: 'The eggs are of a rich nankeen color, plentifully spotted with rather large blotches, some of which are dark brown, others grey, of deeper or paler shade; these markings are thickest at the obtuse end. Axis, 1 inch 6 lines; Diam., 1 inch 3 lines.' It will be seen that this is larger than my eggs, showing that they vary in size."

The eggs of this species are of about the same size as, and considerably resemble those of, the Ring Dotterel (*C. hiaticula*). In shape they are of the true Plover type. The ground color is buffy or pale greenish or olive stone color, and they are pretty thickly studded with spots, streaks, and moderate-sized blotches of deep brown, interspersed with spots and streaks of pale olive brown and dingy inky purple. The eggs are of course devoid of gloss. They are markedly smaller, more neatly marked, paler and yellower, as a body than the eggs of *L. indicus* or *H. ventralis.*

In length they vary from 1·35 to 1·57, and in breadth from 1·02 to 1·1; but the average of twenty-two eggs is 1·45 by 1·07 nearly.

857.—*Hoplopterus ventralis, Cuv.*

The Indian Spur-winged Plover breeds on the banks and in the beds of most of the larger rivers of India and Pegu, penetrating the hills to elevations of 1,500 or 2,000 feet. It does not, so far as my experience goes, occur in the Indus or its affluents.

Never at any season is it seen away from running water; it is absolutely constant to streams and rivers, preferring those localities in which there is a little shingle or rock, and for breeding purposes selecting, of all others, rocky promontories or islands in which the rocks are interspersed with soft cushions of sand.

I have only found their eggs in March and early in April. The following note, recorded many years ago in the Etawah District, gives pretty well all I know about their nidification. I have seen many hundreds of their nests, but have nothing, I fear, to add to what I noted when I first came across them:—

"On the 12th and 13th March 1867 we took a great number of the eggs of these birds, all in nests of four, the nests being nearly semi-spherical depressions in sand, just big enough to hold the eggs, in and about clusters of kunker rocks in the River Jumna below Sheregurh. Occasionally the depression contained a few little pieces of old water-born straw or rush, but often was quite bare. We never found any in open sand-banks, such as the Terns seem to prefer, nor in rocks not surrounded on all sides by water. The kind of places they affect are those frequented by *Esacus recurvirostris,* and often the nests of the two birds are within a few yards of each other. We did not, however, notice any nests concealed under overhanging ledges of kunker, whereas the *Esacus* often lays its eggs in such places. The ground color of the eggs varies considerably. The most common color is pale stone brown, at times more or less tinged with olive, and occasionally with a faint pinkish shade. Commonly they are profusely spotted with moderate-sized very dark brown blotches and with numerous secondary, quasi-below-the-surface, pale purplish brown blotches; but at times they have only a few very large dark brown blotches, and just a few very small ones, with more or less of the secondary markings. Sometimes most of the primary markings are collected in a dense zone near the larger end. The normal type of the egg is very pointed, but some are much less so than others. I notice that all the four eggs of any nest have invariably the same character of markings.

"By the 6th April almost all have hatched off, and the young are seen scampering about. Only two nests with eggs were found between Oodee and Sheregurh, and both were ready to hatch off."

Mr. A. Anderson says: "The *Indian* Spur-winged Plover invariably lays on the beach of large rivers (never *high* banks), or on sandy islands, in close proximity to the water's edge; and, according to my experience, is never found *inland*,—thus differing very materially, both in its habits and nidification from its more common ally, *Lobivanellus goensis*. As in the case of Lapwings generally, the eggs are four in number, and are placed with the pointed ends inwards, in a slight hollow made for their reception.

"I have generally found the eggs placed on the bare soil, or (in Bundlecund) amongst shingle and pebbles; but my friend, W. Bryson, has furnished me with the following anecdote in reference to a deviation from the general rule :—'This nest I had great difficulty in finding, as the birds had taken possession of a ready-made depression in a melon field, where the seed had apparently failed; and they had actually lined the hollow, first with small chips of drift-wood, and then with pieces of dry Moonj grass, with which the cultivators were enclosing their melon fields into square patches to prevent the sand drifting over the creeping plants. The bird (which proved to be a female on dissection) returned to the nest immediately after I had removed the eggs, and so great was her disappointment that she scattered all the materials with her feet, occasionally picking up the straws with her bill, and tossing them away with violent jerks of her head.'

"On one occasion I found the eggs of this bird within a few inches of the water, in an angle of a half-burnt charpoy; the charred wood, clothes, and skull were lying close to it.

"The eggs are slightly smaller, *perhaps* more pyriform, and the ground color is much greener than is usually the case with those of *Lobivanellus goensis*: still I have one clutch of the latter, taken by myself, which is not distinguishable from the usual run of the eggs of *Hoplopterus ventralis*."

The eggs very closely resemble those of *L. indicus*, and after the remarks above quoted no separate description of them is necessary; all that can be said is that, as a body, the eggs of this species are somewhat smaller, and their markings smaller and less bold than those of *indicus*.

In length they vary from 1·42 to 1·78, and in breadth from 1·12 to 1·3; but the average of fifty is 1·58 by 1·18.

858.—*Esacus recurvirostris*, *Cuv.*

The Great Indian Stone Plover breeds throughout India in the beds of all our larger rivers, by preference where banks of sand and shingle, or outcrops of rocks mingled with patches of sand, occur.

I have never found nests elsewhere than in the beds of rivers. Captain G. F. L. Marshall, whose note I subjoin, has found them in a ploughed field far away from any river. I cannot however look upon this as other than a very abnormal and exceptional occurrence. I have found the eggs in the North-West Provinces in March; in the Punjab towards the close of April. Captain Marshall seems to have found his in June (when *Œdicnemus indicus* would have been breeding) in the Saharunpoor District. I have certainly seen a hundred nests of this species, and I think I am entitled to conclude that, setting aside abnormal occurrences, they do always breed in Northern India, in the beds of rivers, from March to the middle of May. I quote two out of many notes that I have recorded about the nidification of this species :—

"We took many eggs of the Great Stone Plover on the 12th and 13th March near Sheregurh on the Jumna. It only lays two eggs, and deposits them in a rather shallow circular depression in the sand. In one instance we found the eggs on the crest of a low bare sand-bank on which no other bird was breeding and where there were no rocks near, but in every other case (and we took at least twenty pairs of eggs) they were in and about rocky reefs (here of a kind of compact kunker) entirely surrounded by water, and very often beneath overhanging ledges of rock. In one or two cases they were inside cavities of the rock, but always where there was some little sand on which the eggs rested. Usually two or more pairs of these and of *Hoplopterus ventralis* breed in pretty close contiguity, and one could usually tell there were eggs near, by the way in which the female stood watching our proceedings from a comparatively-speaking short distance. Of the eggs taken one hatched off in our hands, and some were quite fresh ; but these were the minority. The eggs are large and somewhat oval, but vary much in size and somewhat in shape too, some being more pointed than others, but none of them nearly so much so as the Lapwing's. The ground color varies in shade :—in some it is a cold stone color ; in others, a pale olive brown ; in others, there is a warmer, perhaps I should say more coffee-colored, tint. The markings are brown : in some, almost black ; in others, of a burnt sienna hue : some eggs have a few large bold blotches and a few smaller subsidiary spots and a great portion of the ground unmarked ; others are throughout streaked and speckled, leaving nowhere any parts of the ground as big as a pin's head unmarked, and between these extremes there is every possible variation. All the eggs have a few small secondary markings of a pale dull purplish brown, but these are scarcely visible, except where the primary markings are comparatively sparse. Both eggs in any nest have generally the same character of markings.

"By 6th April all seem to have hatched off ; not one single egg was found between Oodee and Sheregurh. The stomachs of several that I dissected contained the still-undigested claws of crabs.

"I found two pairs of eggs of this species, the one perfectly fresh, the other slightly incubated, on a sand-bank in the Chenab near Wuzeerabad on the 28th April 1870. I saw a good many of these birds early in the month in the Jhelum, but they had not then laid. Usually in the North-West Provinces, wherever these are seen, *Hoplopterus ventralis* are sure to be common, and one finds a dozen eggs of this species to one of the Great Stone Plover, but neither in the Chenab nor the Jhelum did I notice a single specimen of *H. ventralis*."

Captain G. F. L. Marshall writes : "I found two eggs of this bird on the bare ground in a ploughed field about eight miles from the nearest river and three-fourths of a mile from the canal on the 12th June ; they were quite fresh, of the ordinary nankeen color, thickly covered with large blotches of brown. I had two more similar eggs brought me on 7th June. The bird is by no means common in this (Saharunpoor) district."

Typically the eggs are broad ovals, very slightly pointed towards one end. In this respect they resemble those of the Norfolk Plover and of its Indian representative *Œ. indicus*. The ground color varies from pale cream color through an earthy drab color, which is the commonest, to a somewhat pale olive brown, and the markings consist of all possible combinations of blotches, streaks, lines, &c., in some cases thickly sown over the whole egg, in others sparsely distributed, of every shade of olive and umber brown, in some becoming almost black. Besides these, many eggs,—as in the true Plovers,—exhibit underlying clouds and spots of faint inky purple. In some eggs the markings are so closely freckled together that the ground color is almost entirely hid; in others they stand out bold and clear, not covering a fourth of the surface of the shell. In some eggs again the color is clear and deep, as if a coat of varnish had been put over it, while in others it is dull and smudgy, as if smeared over with a very thin coat of whitewash. One never finds two nests of eggs of this species closely alike. In size they little exceed those of the Norfolk Plover, though they are much larger than those of the Indian representative of this latter. The eggs are of course devoid of gloss.

In length they vary from 2·0 to 2·32, and in breadth from 1·5 to 1·7; but the average of the twenty eggs now before me is 2·15 by 1·6.

858 *bis.—Esacus magnirostris, Geoffr.*

The Great Australian Stone Plover occurs within our limits, so far as is yet known, only in the Andamans and Cocos, where I last year discovered it. We shot single specimens at both the Great and Little Cocos; at the latter we obtained an egg. We saw the bird, but failed to obtain a specimen at Escape Bay in Macpherson's Straits; subsequently I have received a specimen from Port Cornwallis. The egg we obtained at the Cocos was taken on the 24th March; it was quite fresh, and was placed in a small depression in the coral sand, a little above high-water mark; both parents, one of which we secured, were standing close to it. Mr. Mason the year previously obtained an egg, precisely similar to the one we got, and which must have belonged to this species, at Corbyn's Cove, a few miles south of Port Blair. Mr. Mason's egg was obtained on the 15th April.

The eggs closely resemble those of *E. recurvirostris*, but are handsomer and, I think, more elongated. They are large oval eggs, usually I judge a good deal compressed towards one end. The shell is tolerably fine and smooth, but has no gloss. The ground is a creamy stone color or very pale *café au lait*, boldly blotched, streaked, and spotted with blackish brown, paling in some places to a yellowish or raw sienna brown. Besides these primary markings, a few small pale inky purple sub-surface looking spots and clouds are thinly scattered everywhere about the egg. The blackish brown markings are chiefly confined to the large end. The eggs measure 2·6 by 1·75. The largest *E. recurvirostris* egg that I have ever obtained, and I have taken a vast number, measured 2·32 by 1·7. The average is 2·15 by 1·6.

859.—*Œdicnemus indicus, Salvad.*

The Indian Stone Plover is, I am half-disposed to think, specifically separable from its European representative, our well-known Norfolk Plover. Our

Indian species breeds in the plains almost throughout India, but only in suitable localities. The country must be dry, and there must be patches of scrub or low jungle, or large groves or dry jheels, pretty thickly studded with grass tufts. In such situations or in open wastes, or even ploughed fields near to these, the Stone Plover makes its nest, the site chosen depending a good deal on the season and the period at which they lay. In this latter they are very irregular. The majority no doubt lay in April, but I have taken eggs myself in every month from February to August, both inclusive. Of forty-seven dated eggs before me, the numbers indicated below were taken in each month :—

February.	*March.*	*April.*	*May.*	*June.*	*July.*	*August.*
2	5	26	5	5	2	2

According to my experience in Upper India, *the* place of all others in which they love to breed is some huge old Mango tope in which the trees are not very thick, surrounded by a good high mud bank, and of which the grass is strictly preserved by some native gentleman for the use of his cattle towards the close of the hot-weather, when all other grass has disappeared. In such a grove I once found thirteen nests and saw at least fifty birds, many of which had not apparently yet laid.

The nest is a mere hollow scooped out by the birds, very often in the midst of a layer of dead leaves, generally quite unlined, occasionally with a few blades of grass doing duty as lining. If the nest is out in an open place it is generally more or less concealed at the base of some bush or tuft of grass, but if in a grove it is very generally not far from some large root of one of the mango trees in the midst of dead leaves, and these so harmonize with the colors of the eggs that no further concealment is necessary. A dozen times I have passed over, all but treading on eggs thus placed, and which I was eagerly looking for.

Two is the ordinary number of eggs laid, but I have found three in a nest at least half-a-dozen times. I should guess that in about one in ten nests three eggs occur.

Captain G. F. L. Marshall writes from the Saharunpoor District: "This bird is by no means common everywhere: it is very locally distributed, being plentiful at the foot of the Sewaliks and in the belt of Dhak jungle in the Mozuffernugger District, whilst in other places scarcely a specimen is to be met with or even heard, for I have often heard without seeing them.

"It breeds from April to June, laying two eggs of a light nankeen color profusely spotted, speckled, blotched, and streaked with deep blackish brown, on the ground, generally on the grass at the foot of, and just under the shelter of, a bush. The eggs are large for the size of the bird, rather lengthened in shape, and more or less pointed at the thin end.

"The young, unlike others of the Plover tribe, seem very helpless and unable to run till quite fledged. On the 23rd May I noticed one of these birds sneaking away from a low 'mola' bush on a sandy plain, and on going to look I found a young bird nearly fledged sitting in a slight hollow in the ground, evidently the nest; though able to stand and to walk about, it made no attempt to escape, but permitted itself to be caught at once.

"On the 13th June I found two eggs on the grass under a Keekur (*Acacia arabica*) bush, a little patch being slightly cleared and a few dead leaves collected. The hen was sitting on the eggs as I rode up, and the cock bird was standing pluming himself a few yards off. On seeing me they both bent down their heads and crept quickly and noiselessly off through the grass to the other side of the bush, but too late to save their eggs for I had seen the female before she saw me."

Captain Beavan remarks that this species is "not uncommon in the uplands of Manbboom, where I found them breeding in April, (cf. PROCEEDINGS ZOOLOGICAL SOCIETY, 1864, p. 377). According to my experience they lay but two eggs, although they may possibly lay three as stated by Dr. Jerdon. I have only observed this species singly or in pairs, never in flocks as described by him."

Mr. W. Blewitt writes: "I took three nests of this species near Hansi during the latter half of the month of April; two of the nests contained two fresh eggs each; the third contained three partly-incubated ones.

"The eggs were placed in a trifling hollow in the ground scraped by the birds. In one case there were a few blades of dry grass under the eggs; in the others the eggs were laid on the bare ground with a few pebbles arranged as a kind of border around the edge of the hollow.

"In one case the eggs were laid in the bed of a dry jheel pretty thickly sprinkled with tufts of dry coarse grass; in the others a bare open plain was the situation chosen."

Those who doubt the specific identity of the Indian and English Stone Plovers would, I think, find their doubts strengthened by a comparison of the eggs of the two species or races. The largest egg of *Œ. indicus* that I have yet obtained is smaller than the smallest of the English specimens that I have seen. In shape the eggs of both races closely resemble each other,—normally broad ovals, obtuse at both ends, with the occasional occurrence of a more or less elongated and pointed variety. There is not, however, in the Indian species that rich variety in the ground color noticeable in the eggs of the English species. In our bird the ground color is invariably yellowish white, buffy yellow, or pale buffy brown. I have never seen specimens, such as I have taken in England, with a rich olive green ground. The markings are, as usual, spots and specks, streaks and blotches, of a deep, usually more or less olive, brown, sometimes almost black, sometimes comparatively pale, thickly or thinly massed or scattered over the surface, and combined in an endless variety of designs. Most of the eggs, besides these primary markings, have a few pale inky purple clouds and spots underlying them. The eggs, as a rule, are glossless, but I have seen one or two specimens exhibiting a slight gloss. I possess a single abnormal egg taken by Mr. Brooks, the ground color of which is greenish white, with only a very few brown specks on it.

Of a pair of somewhat similar eggs I have noted :—

"*April* 18*th*.—Took two eggs, which, had we not seen the bird rise from them close at our feet, no one could possibly have believed to belong to this species. One was pure pale greenish grey, with a few tiny spots, specks, and scratches of brown, so few and inconspicuous as to be unnoticed at the distance of a foot; the other, dirty brownish grey, with very numerous specks and hair-like scratches of dirty brown, all so individually inconspicuous as to make the egg at a little distance appear a nearly uniform, dirty, pale brown. This extraordinary deficiency of color was *not*, as is commonly the case, accompanied by any dwarfing."

Of another very remarkable egg I have noted :—

"The markings were very large and bold, two gigantic blotches on the broad half, like Asia and Europe, and North America, with a number of contiguous islands. Color your land black, your seas stone color, and a terrestrial globe distorted into the shape of an egg will convey an admirable idea of the markings on this queer specimen."

In length the eggs vary from 1·65 to 2·15, and in breadth from 1·3 to 1·5; but out of forty-seven eggs thirty-nine measure less than 2 inches in length, and the average of the whole number is 1·9 nearly by 1·39.

861.—*Dromas ardeola, Payk.*

We have no really reliable information as to the nidification within our limits of the Crab-catcher.

Mr. Layard, who did so much for ornithology in Ceylon, obtained an egg there, which he considered that he had good grounds for believing to pertain to this species, but I have seen many eggs of *Œ. indicus* perfect counterparts of this egg, and it is by no means certain that this egg *did* belong to *D. ardeola.*

The egg itself, though in a very dilapidated condition, is still in the museum which formerly belonged to the Asiatic Society of Bengal.

It is a broad oval, somewhat compressed towards the small end, of exactly the same shape as eggs of *Esacus recurvirostris* and *magnirostris* and *Œdicnemus indicus.*

The egg measures 2 inches by 1·4.

In color, it is a warm drab color or *café au lait,* pretty thickly blotched, streaked, and spotted with deep blackish brown.

863.—*Grus Antigone, Lin.*

The Sarus breeds freely over the whole of the North-West Provinces, Oudh, and Upper Bengal, and more rarely in the Punjab, cis-Sutlej, the eastern portion of Rajpootana, and parts of the Central Provinces. Further I cannot speak from personal knowledge, and no one has ever sent me a note on the nidification of this species elsewhere, perhaps considering it too common for notice.

They breed in July and August, some few laying in some seasons as late as the middle of September. Soon after the first burst of the rains, *i. e.,* towards the close of June, the old birds, which I may mention pair for life, begin to construct their nest. These are in nine cases out of ten on some firm spot in the midst of the largest jheel or swamp that they can find,—not always an island, for they often build on sites completely overflowed, but some spot that would be an island if the water fell eight or ten inches.

The nest is a huge heap, a broad truncated cone, composed of reeds and rushes and straw, varying much in size according to situation and circumstances. At top it is about two feet in diameter, with a central depression from four to eight inches deep for the eggs. If, as is commonly the case, the nest is placed in water, the bottom of the egg cavity will be from eight to twelve inches above the surface of the water, and there may be six inches to two feet of nest below water. On more than one occasion, when in sudden and heavy falls such as we get in India, six and eight inches of rain falling within twelve hours, the jheels were rising very rapidly, I have seen the birds very busy raising their nests. One nest that had thus been raised I measured a couple of months later, when the ground on which it stood was dry, and found it to be fully nine feet in diameter at base and three feet in height, and it must have lost at least a foot by settling. When built on land surrounded but not overflowed with water, the nest is a much less pretentious affair, perhaps five feet in diameter at base and a foot only in height. Occasionally, apparently where they could not get a large enough piece of water to secure as they considered their safety, I have found them seeking this in concealment. As a rule, the nest is out in the open, visible from all directions at a mile's distance. In the few cases to which I refer I have found it in dense beds of bulrush and reed so lofty that, even when standing on its nest, the bird was only to be seen by climbing a neighbouring tree. In these cases the rushes and reeds, where they were thickest, had been bent down across and across, so as to form a platform five or six feet in diameter, and on this a comparatively slight nest had been constructed. Two is certainly the normal number of eggs, but I have twice (out of more than one hundred nests) found three, and I have also occasionally seen three young birds in company with an old pair.

I remember one day, as I was coming home from Rahun, I saw in a sheet of rain-water some distance off the road a Sarus sitting on her nest and the male standing beside her. I rode as near the place as I could, and then sent my syce to get the eggs. As he commenced wading towards the nest the male began to dance about, flapping his wings and trumpeting most bravely; but when the man got within a few yards and landed safely on the patch of dry ground on which the nest rested, the male put his head down and ran off very crestfallen to a ridge in the water some fifty yards distant, whence he began with loud cries to encourage his lady not to allow "that black rascal" to take any liberties. She sat quite still, neither moved nor cried, only as the man came close to her made such vigorous pokes and drives at him that he got frightened and was picking up a great dry branch to strike her with, when I called out to him to flap her in the face with his waist-cloth. This he did vigorously, and this being more than she could endure she reluctantly crept off the nest, now complaining loudly, and joined the male. There was only one egg: this the man brought, but before he could reach me the female had regained the nest, and after minutely examining it and making certain the egg was gone, she stood up on the top and with bill, legs, and feet commenced throwing the straw about in the air in the most furious manner as if beside herself with rage. Then the male came up trumpeting vigorously, but directly he came near she flew at *him* and he scrambled off half-running half-flapping through the water, and making more noise than ever. By this time I had received the egg, and found the point of the young one's bill protruding, so sent the man back with it sharp. As he approached, the female ran off, but she must have seen what he was at, for before, (having gently laid the egg in the disordered nest, which he smoothed a little), he could get off the island, the female was down upon the egg, sitting as if nothing had happened, but uttering a low chuckling sound such as I had never heard before. But the real joke was to see the male; the moment he perceived that the coast was clear and that his mate was again sitting, he came back to the nest and paraded round and round, his wings extended, his head in the air, trumpeting *á ne pouvoir plus,* clearly wishing her to believe that it was all his doing.

I have heard many stories of these birds showing fight in defence of their *penates,* but this was the nearest approach to anything of the kind I ever witnessed, and, as a rule, both birds run away directly you get within twenty yards of the nest.

With dogs it is different, and I have seen a large water-retriever so buffeted, scratched, and cut in two minutes that he was fain to make off at his best pace howling and yelping, and I have no doubt that foxes or jackalls would fare equally ill.

Captain G. F. L. Marshall remarks: "The nest is built in the rainy-season, and is just a heap of grass and bushes completely surrounded by water. I took two eggs near Bolundshahr on the 25th July; the female was sitting and the male bird feeding near, but neither moved away from the jheel nor showed any inclination to interfere with the misappropriation of their eggs.

"On the 29th August, in the Muttra District, I found one egg and a young one; and in the Aligurh District, on the 8th September, I found two fresh eggs."

The eggs are invariably elongated ovals, and are usually a good deal pointed towards one end; but long cylindrical varieties, narrower and more elongated than even similar varieties of the Great Bustard, are not uncommon. The shell is very hard and strong, very rarely almost devoid of gloss, *generally,* fairly, and sometimes highly glossy. The shell is in most eggs pitted with small pores, set rather wide apart, and in some specimens very conspicuous owing to the bottoms of the pores being colored differently to the rest of the shell of the egg, and thus producing a speckled effect. Usually, however, the pits are only noticeable on close inspection, and not uncommonly they are so fine and minute as to be scarcely noticeable at all. The ground color varies,—in some it is pure white, in some clear pale sea-green, in others a sort of pinky cream color, and numerous intermediate shades are observable.

Some few eggs are entirely spotless and devoid of markings, but they are commonly more or less profusely studded with blotches and clouds of pale yellowish brown, purple, or purplish pink. Sometimes the markings are all large, in others,—but more rarely,—they are small and speckly. As a rule, the markings are, I think, most numerous at the large end. In some they are conspicuously so, and in some they are entirely confined to that part of the egg. As I noticed when speaking of the eggs of the Great Bustard, the eggs of this species very frequently exhibit pimples, warts, creases, and wrinkles; indeed, after examining a large series, I should say that not one in twenty was entirely free from such imperfections; but of the hundreds of specimens that I have at one time or another taken of this bird's eggs, I have never met with one anything like so richly colored as those of the Common Crane (*Grus cinerea*), which latter by the way have always appeared to me, though larger and longer, to approximate somewhat in appearance to those of *Otis tarda.*

The eggs vary excessively in size, in length from 3·6 to 4·48, and in breadth from 2·35 to 2·75; but the average of fifty-one eggs is 3·96 by 2·56.

871.—*Gallinago scolopacina, Bonap.*

The Common Snipe breeds, probably, in Cashmere.

Writing from thence Mr. Brooks said: "I saw a Common Snipe soaring away above the swamp where I took the Mallard's nest, and as it was making its breeding, bleating, and drumming noise, doubtless its mate was sitting on its nest below, though I failed to find it."

873.—*Rhynchæa bengalensis, Lin.*

I have very little information as to where the Painted Snipe does breed. I have only once myself taken a nest, and that was at the end of August, in a small swamp on the Diamond Harbour Road about six miles from Calcutta. It was on very wet ground in the midst of low rushes, and consisted of half-dry rush twisted round into a tolerably neat and compact nest. It measured

6 inches in diameter exteriorly and less than 4 inches interiorly, and the cavity, which had no lining, was a good inch in depth. It contained two quite fresh eggs.

A nest of this species sent me by Mr. A. J. Rainey with one egg as that of *Charadrius fulvus*, but which unmistakably belongs to this species, the egg not being at all that of a Plover, but corresponding precisely with those that I took of this present species, is a large circular pad of mingled coarse and fine rice-straw, some 6 inches in diameter and about 1·75 in thickness, and with a central depression perhaps ¾ inch in depth. It was taken on the 22nd September 1871 at Khalispoor, about 1½ mile from Khoolna in Jessore, on rather wet ground in a bare field from which a crop of rice had been reaped about a month before. This year (1874) Mr. Rainey took two precisely similar eggs (which he very kindly sent me) from a similarly situated and very similar nest, on the 30th September at Khoolna, and this time correctly identified the parents.

Captain G. F. L. Marshall took the eggs, of which I still have two, in the Saharunpoor District, but could not at the time ascertain what bird they belonged to. Captain Sheppard obtained a nest with four eggs in September in Raipoor.

Mr. M. Forbes Coussmaker, writing from Chamrajnugger (35 miles south-east of Mysore and 40 miles north of the Nilghiris) informs me that he has satisfied himself that this species breeds in his neighbourhood during December.

From Ceylon Mr. Layard tells us, (ANN. AND MAG., NATURAL HISTORY, 1853, Vol. XI, p. 228): "Nest in a slight depression of the soil, lined with a few tufts of grass. Eggs, four in number, of a brownish yellow, washed all over with dark blotches, rather more frequent at the obtuse end, apparently at times taking an annual form."

Mr. Legge, writing from Ceylon, says of the Painted Snipe: "This species, which is resident in this island, (although I have no doubt its numbers are very much increased in the cool season) appears to breed at all times of the year.

"To commence with the evidence of our pioneer, Layard says: 'The season of incubation is from May to July.' That it breeds at or about this season is, I know from personal observation and inquiry, quite correct. The late Mr. Advocate Lorenz, (a much lamented member of the Ceylon bar), who took a great interest in birds, wrote me shortly before his death that he had once found a nest with young in the month of April in the Western Province. It was situated in the grass of a bank between two paddy fields. Again, a friend of mine observed a pair of old birds in company with two young near a tank in the south of Ceylon. This was in May 1872. On his giving chase, the chicks took to the water and swam like ducklings. In the beginning of September last year, I had several young brought me from Wackweell, near Galle, a locality where I have found them more abundant than anywhere else in Ceylon. These data corroborate Layard's statement, but they testify at the same time to a wider period, commencing a month earlier and ending a month later. With regard to the cool season, I am aware of eggs having been taken perfect from birds in November, and of young being captured in March. Mr. Holdsworth procured a beautiful egg from a wounded bird on the 31st December, (PROCEEDINGS, ZOOLOGICAL SOCIETY, 1872, p. 473), and I obtained another taken from a dead bird on the 29th March.

"The eggs appear to vary much in marking; that mentioned above, which is in my possession, is of stone yellow, ground color blotched all over irregularly with rich dark sepia (?) over numerous bluish grey and light brown blots, with a few pencillings of dark-brown among the dark blotches. Axis, 1·36; diameter, 0·98. Another egg I have seen was magnificently clouded all over with dark sepia (?), there being fully as great an extent covered by it as there was of ground color. Another specimen is very pale stone yellow, with a few bluish grey blotches and some large dark sepia blotches at the obtuse end.

"A young bird which I kept was very interesting in its manners. It lived but two days, and was confined in my back-yard where it used to run about hiding behind tubs, chatties, and such articles; when tired, it used to rest its head by placing the point of the bill on the ground after the manner of the New Zealand *Apteryx*; when pursued, it would spread out its wings and squat on the ground, and then run a little distance crouching down again."

Dr. Jerdon states that "the Painted Snipe is a permanent resident in some parts of India, breeding in June and July in thick marshy ground, and laying four eggs, which are greenish, with large brown blotches, and very large for the size of the bird."

The eggs of this species are of a truly Scolopacinine type,—moderately broad ovals, with one end, as it were, pulled out and pinched near the extremity. They are, however, remarkably small for the size of the bird, considering the natural order to which this belongs.

The Common Painted Snipe probably weighs four times as much as the Jack Snipe, while the cubic contents of the egg of the former are scarcely four-fifths of those of the eggs of the latter. In color and markings the egg has a somewhat Plover-like appearance. The shell, very hard and of a very close and compact texture, has commonly a faint gloss. The ground color is a clear pale buff or warm *café au lait* thickly and boldly blotched and streaked with an intensely deep and rich brown, which at a little distance appears perfectly black, but which here and there pales to a raw sienna brown. The markings often cover considerably more than half the surface of the egg.

Neither in size nor in its type of coloration is this egg what we should have been led to expect; but as one egg I possess was taken out of the oviduct of the female by Colonel Tytler, and as I have taken some eggs myself and other similar eggs have been sent me by different observers from different parts of the country, there cannot possibly be any mistake.

In length they vary from 1·29 to 1·45, and in breadth from 0·95 to 1·05; but the average of ten eggs is 1·4 by 1·01.

893.—*Tringoides hypoleucos, Lin.*

Within our limits, I only know for certain of the Common Sandpiper breeding in Cashmere. There in May on the banks of the Sindh and other rivers its nests are common. Captain Cock and Mr. Brooks found many, and I have received them since from native collectors.

It appears that they usually lay their eggs close to the water in a little depression in the shingle or coarse sand without making any nest, but that sometimes a lining of grass or dead leaves is placed in the hollow. Usually the nests are in no way concealed, but at times they are partially hidden under a bush, tuft of grass, or rock. This is my native informant's account; I have seen no nest myself.

Captain Cock remarks: "I found the Common Sandpiper breeding plentifully on the banks of all the streams that run into the Cashmere Valley, and took many nests on the Sindh River in May and June.

"The nest is placed a few yards from the water in an open situation in stony localities amongst low sage bushes. It is on the ground in a slight depression, generally to the north of a low bush, and consists of a few little pieces of stick or a few fragments of dead leaves. It always contains four eggs, the pointed ends of which are placed together in the centre. The bird gets off the nest very slowly as if it wished to attract attention to itself."

The eggs are always four in number.

The eggs of this species are typically ovato-pyriform in shape, hemispheres united to somewhat elongated truncated cones, which latter are again often a good deal compressed or pinched in towards the tips. Many eggs, however, are merely somewhat elongated ovals, broad at one end and elongated and pointed towards the other. The shells are very fine and close, and have a certain amount of gloss.

The ground color varies a little, but the most usual type is a pale creamy stone color, with a buffy, *café au lait,* or sometimes even pink tinge. The markings are a rich red brown, in some cases so intense as to be all but black, and consist of specks and spots more or less intermingled with, and underlaid by, spots and small clouds of reddish, or in other cases pale inky, purple. The eggs do not vary very much. The markings are never very dense, except at the large end, where they sometimes form an almost confluent cap, but individual eggs differ in having them *comparatively* dense and sparse. The markings, never bold or large, vary from mere specks to spots, nearly an eighth of an inch in diameter; this also imparts a somewhat different character to different eggs. On the whole, however, a series of the eggs of the Common Sandpiper is more uniform than any series of most other well-colored and marked eggs would be.

In length they vary from 1·35 to 1·52, and in breadth from 1·0 to 1·11; but the average of fourteen eggs is 1·46 by 1·06.

898.—*Himantopus intermedius, Blyth.*

The only places in Upper India where I have seen the Stilt breeding are in and about clusters of salt works situated in the Goorgaon District, about thirty-five miles south of Delhi, known collectively as the Sultanpoor Works.

Mr. Adam has found quite young birds at the Sambhur Lake, and some few pairs probably breed there; and Captain Feilden mentions that in June 1867 some twenty pairs bred at a jheel near the village of Toomulgoodium, about thrty miles from Secunderabad on theMasulipatam Road; but, with these exceptions, not only I, but nearly fifty other oologists scattered over the length and breadth of the empire, have for years sought in vain for the breeding haunts of the Stilt.

The merit of discovering Sultanpoor as a central breeding haunt is due to Baboo Kalee Narayn, the Customs patrol in charge of the works. He assured me, when I first visited them in the winter, that the Stilt did breed there in summer, and he correctly pointed out, as the result of his observations, that the eggs, though greatly resembling those of the Red-wattled Plover, which also breeds there abundantly, can be distinguished from these by, (1*st*), the nest, the Plover never making any; (2*nd*), the size of the egg, which is slightly smaller, and the shape, which is more attenuated at one end; and (3*rd*), by the markings, which are less numerous and more clearly defined.

I specially note this, because neither before nor since have I ever met any Hindoo gentleman who, of his own accord and unprompted by Europeans, had taken heed of such details of natural history. That summer he collected some eggs for me, and next year I visited the place, and it may give some idea of the numbers that resort to these works to breed if I mention that between the 26th April and the 29th May he had actually collected two hundred and thirty-five eggs, and that on my visit I counted in two days over one hundred eggs, without going over one-tenth portion of their laying sites.

The birds are seen in small numbers throughout the year, but congregate in great numbers towards the middle of April about the works, which consist of brine-wells and many hundred acres of shallow, rectangular, evaporating pans from 100 to 200 feet square and from 6 to 10 inches deep. These pans are merely depressions dug in the soil and lined with *chunam* or fine lime obtained by burning *kunker*, a nodular concretionary limestone found in beds near the surface more or less throughout the plains of Upper India. Small strips of ground from a foot to five or six feet broad divide the pans, and on the margins of these, or even in the beds of disused pans, where only a little brine ever stands, the Stilts build their nests.

They collect together small pieces of *kunker*, or the broken lime lining of the pans, into a circular platform from seven to even twelve inches in diameter and from two to three inches in height; on this again they place a little dry grass, on which they usually lay four eggs, but not unfrequently only two or three. They begin to lay, according to season, towards the end of April or the beginning of May; and by the beginning of June numbers of young are to be seen about, and by the 1st July most of the eggs that remain are hard-set. The majority of the birds lay during June, earlier or later according to season.

The temperature of the nest at this time in the full sun probably averages quite 140° Fahrenheit.

The birds have their choice of sites, though on what this depends I could not find out. Not one nest was found in two successive seasons at Balpoor or Kuliawas; very few at Sultanpoor. On the other hand, at Moobarikpoor (and all the works are exact *facsimiles*, one of the other) the nests were in some places crowded to an inconceivable degree. On one strip, about 3 feet wide and 100 feet long, there were twenty-seven nests on one margin and eleven on the other, besides five nests of the Red-wattled Lapwing. So accustomed were the birds to the workmen walking up and down the middle of this strip that many of the birds never moved, though we passed within a few inches of them, and those that did move merely stalked leisurely a few paces away into the salt-pans on either side.

No other species, except these two, appeared to breed at these works. During the winter the pans are thronged with *Totanus stagnatilis*, a *comparatively* rare bird in the North-West Provinces, but all of these, together with *canescens*, *calidris*, and *fuscus*, a few of which are also regular winter visitants to the pans, leave as soon as the hot-weather fairly sets in.

Mr. W. V. Legge, writing from Ceylon about this species, says:" This is another bird which I have been the first to discover breeding in Ceylon. I found it nesting on the shores of the Salt Lakes in the south-east, near Hambantota. It chooses a bank or little eminence and scratches a slight hollow in the sand or banks of shell fragments. The eggs, three in number, are rather rich stone yellow, with light brown spots at the obtuse end, and dark sepia blotches over these, throughout the whole surface; they are pyriform in shape, and measure 1·65 in length by 1·27 in breadth."

The eggs of this species are somewhat smaller than those of the European *H. autumnalis*, which they closely resemble. In shape and general appearance they are very Lapwing-like, reminding one much of the eggs of *Lobivanellus indicus*. They are, however, as a rule smaller, more pointed, and with less numerous, but more clearly defined, markings. In shape they are moderately broad ovals, elongated, and in some pinched out as it were towards one end, reminding one of eggs of the Redshank. The texture is very fine and compact, and the eggs have many of them a certain amount of gloss entirely wanting in the Red-wattled Lapwings' eggs. The ground color appears to vary as in the Plover's. In some it is a darker or paler olive brown; in others a greenish-stone color; in others pale cream color or pale *café au lait*. The markings consist of specks, spots, blotches, and streaks irregularly sprinkled over the whole surface of the egg, but most thickly so, as a rule, towards the large end. The markings are black, blackish brown, and rich umber brown. As a rule, the markings are all clearly defined, and are all of much the same color. The secondary markings of pale inky purple, so characteristic of most of the Lapwings' eggs, are normally almost entirely wanting in the Stilts'.

In length the eggs vary from 1·5 to 1·8, and in breadth from 1·1 to 1·32; but the average of sixty-four eggs taken at random out of over three hundred and carefully measured was 1·64 by 1·21.

900.—*Metopodius indicus, Lath.*

Dr. Jerdon tells us that the Bronze-winged Jacana is found throughout India; but, as a matter of fact, it is almost absolutely confined to the moister portions of the country, and is very rarely if ever seen in the dryer portions of the North-West Provinces, in the Punjab, Rajpootana, and Sindh. In the moister districts of Oudh, the sub-Himalayan Terais of Rohilkund and Goruckpoor, through the greater part of Bengal and Burmah, it is very common, and here, as also in the better-watered portions of the Central Provinces and the Peninsula of India generally, it breeds from June to September.

It never ascends the hills, so far as I have ascertained, and never frequents rivers, but affects exclusively large, more or less rush-grown and lotus or weed paved, jheels or swamps.

The nest, generally a large one, composed of rushes and water-weeds twisted round and round, so as to form a circular pad, from 10 to 20 inches in diameter, with a central depression 2 or 3 inches in depth, is commonly placed here in Bengal (where alone I have myself taken it) on a bed of lotus leaves in some secluded rush-surrounded corner; one nest, however, was on a piece of swampy ground in the midst of a clump of thick rushes, surrounded on all sides by the water of the jheel.

Of six nests none contained more than seven eggs, but the boatmen averred that the birds, sometimes at any rate, laid ten.

Mr. W. Theobald makes the following remarks on the nidification of this bird in Monghyr :—

"Lays in August. Eggs, long ovato-pyriform. Size, 1·50 by 0·97. Color, clear brownish-ochre, strongly lined and streaked with black. Nest, of weeds in jheels."

Mr. Robert Blewitt says : "I found this species, though not in numbers, in the jheels and marshes of the Lullutpoor, Saugor and Nursingpoor Districts and the Valley of the Nerbudda. It was pretty common between Jubbulpoor and Raipoor, and in this latter country of swamps and tanks it is abundant. It breeds from June to about the middle of September. The nest is made of weeds roughly put together. This nest, of various sizes from a foot to nearly 2 feet in diameter, is often made on the water surface, at others on any island near to the water's edge. In each situation a sheltered spot is chosen, offering concealment; among thick-growing lotus leaves is a favorite resort.

"The regular number of eggs I have not been able to ascertain accurately, but from eight to ten may be taken as the maximum number. In color they are sometimes of a light olive brown; at others of a darker brown, streaked and marked with black.

"This Jacana runs with wonderful facility over the floating weeds, lotus leaves, &c. It is a rather shy bird, and when alarmed will conceal itself by lying close on the weeds or plants, with its head and neck well stretched out on a level with the body. When it can do so, for more effectual concealment it will half-sink its body in the water. The bird is likewise an expert diver. The boatmen on the Talbeehut Lake (Lullutpoor) told me that the birds moult once in each year just before the rains in April and May."

The eggs of this species are amongst the handsomest I have ever seen, and they remind one most strongly of those of the Australian *Hydralector cristatus*.

In shape the eggs are moderately broad ovals a good deal pointed towards one end, and, especially when fresh, have the most superb lustre of any egg I know; indeed, it is often difficult to convince people who see them for the first time that they are not made of agate, or, when they feel them for themselves, fancy-imitations made in the lacquer-work in which the natives in some parts of India so greatly excel. This extraordinarily high polish grows somewhat less bright after the eggs have been kept some time, but even when years have passed away they still remain the glossiest of our Indian eggs.

The ground color varies much: in some it is a very pale stone brown, in others a rich *café au lait* color; in others again a reddish olive brown, and in some a very deep rufous or at times olive brown. The markings are chiefly blackish brown, at times all but black, and here and there paling to a deep reddish brown, and they consist almost exclusively of lines, finer or coarser, inter-twined and entangled, as it were, one with the other in inextricable confusion. Here and there a few spots and even blotches are noticeable, but the general character of the markings is as above described.

In length the eggs vary from 1·3 to 1·55, and in breadth from 0·96 to 1·08; but the average of fifty-eight eggs is 1·47 by 1·03.

901.—*Hydrophasianus chirurgus, Scop.*

The Pheasant-tailed Jacana, unlike the preceding species, is really found all over India, ascending the hills to some extent and breeding freely, for instance, in the lakes in Cashmere. Long since I described the nidification of this species, and I have nothing further to add to what I then said, which I now quote:—

"They lay from the middle of June to August. The nest (placed in any pond, jheel, or swamp, just as often on the outskirts of some village or small town as in amongst fields or jungle) is often a mass of weeds and rushes heaped together in the water in the midst of the thickest grass and rice, and so low that the eggs are half-immersed in water. Occasionally the nests are amongst the grass of some little island, and then they are much slighter. At times, even when constructed in the water, they are so small as hardly to be able to contain the eggs,—little, shallow, circular cups of rush and water-weed, on floating lotus leaves or tufts of water-grass. Dr. Jerdon tells us they lay from four to seven eggs; they *may* in Southern India, but I do not believe it, and in Northern India they *do not!* Out of hundreds of nests that I have seen, I only once found one containing even five eggs. Four is the almost invariable number laid point to point. The apical angle is too great to allow of six or seven being thus laid. You might as well try to get seven right angles into the centre of a circle.

"The eggs of this species really seem to indicate that it is not so closely allied to the Rails and *Parridæ* as is generally supposed. How very different are the eggs of its nearest apparent Indian ally, *Metopodius indicus,* with which we have just dealt, and which lays, Waterhen-like, from eight to ten moderately broad oval eggs, a good deal pointed towards one end, but still manifestly intended to lay anyhow in the nest, and not point to point like a Plover's or a Redshank's.

"If *H. chirurgus* and *M. indicus* are so very nearly allied as all systematists seem to consider them, is it not extraordinary that their eggs should differ so absolutely in shape, texture, color, markings, number, and manner of disposition in the nest, and that the former should have a distinct winter plumage while the latter has none? The two skeletons require careful comparison. I should be inclined to suspect that these two species are derived from very different stocks, although a similarity of external conditions may have led to a similar superficial modification of external forms."

From Saugor Mr. F. R. Blewitt writes: "This Jacana breeds here from the middle of June to August. I found two nests,—one a floating one, made of grass and weeds, the other on a small island similarly made. The nests were more than a foot in diameter. I am not certain as to the maximum number of eggs. The largest number I found was four. Breadth, 1·12. In color they are of a fine greenish bronze throughout."

Captain G. F. Marshall remarks: "I have taken eggs of this species in Bolundshahr and Cawnpore in July, on the 30th in the former, and on the 8th, 16th, and 27th in the latter. The bird comes in with the rains; the nest is made in water, about two feet deep, by collecting together a few of the floating weeds, and a few more pulled up by the roots, making a slight sunken platform just sufficient to float the eggs which are deposited on them; there is no attempt at concealment, and the eggs which are of a deep bronze color are visible from the bank."

Dr. Jerdon says: "It makes a large floating nest of dried pieces of grass and herbage, sometimes, according to some accounts, of the stalks of growing rice, which it bends downwards and inter-twines; and it lays in July or August from four to seven eggs, sometimes more, of a fine bronze brown or green."

In shape the eggs of this species are so peculiar that once seen they can never be mistaken. They may best be described as peg-tops without the pegs,—

cones slightly obtuse at the point, based upon somewhat flattened hemispheres. In texture the shell is compact and hard, and, especially when fresh, has a fine gloss. The color varies a good deal; when quite fresh they are of a rich deep bronze color, sometimes a greenish and sometimes a more rufous bronze color; but, as incubation proceeds, they very commonly, though not always, bleach somewhat under the long continued influence of sun and water, and grow paler and paler until they become a pale yellowish stone, or in other cases pale *café au lait* color.

In length the eggs vary from 1·26 to 1·62, and in breadth from 1·03 to 1·18; but the average of fifty eggs is 1·46 by 1·12.

902.—*Porphyrio neglectus*, *Schl.*

The Purple Coot breeds all over the plains of India wherever there are large swamps and jheels with plenty of rush and reed. As a rule, not less than ten pairs breed in the same place. I have invariably in Northern India found the eggs in July and August,—never earlier or later,—but they are said to have been met with in June and September.

Two noteworthy points are, (1*st*,) that all the birds in the same Swamp both lay and hatch off about the same time; (2*nd*,) that in two different jheels only a dozen miles apart and apparently precisely similarly situated, there will be a difference of fifteen days or more in the period of the laying of the two colonies. Thus I have noted that one year, on the 10th August, I found every one of over a dozen nests in the Atchuldey jheel empty and the young hatched off, while on the 16th of the same month at Rahun, distant some twenty miles only, I found seventeen nests full of eggs, mostly a good deal incubated it is true, but none ready to hatch off for at least a week.

The nest is made of pieces of rush and reed in amongst thick grass and rice. Sometimes it is on the ground, sometimes though not free it is floating. In the latter case the bottom of the cavity will not be above an inch or two above the surface of the water, but there will be a mass of stuff submerged. Ten is the maximum number of eggs that I have as yet found in any nest, and I have repeatedly taken seven and eight well-incubated ones.

In one nest, containing eight hard-set eggs, I once found a *quite* fresh egg, which seemed to belong to a different species, though it may *possibly* have been an abortive and late-laid egg. The ground color was a pale *sea green*, and the markings, pale, washed-out brownish red, and clouded and dingy purple. It measured 1·82 by 1·3.

If not an abortive egg, I cannot conceive what species it belongs to, certainly not to any of the birds with whose eggs I am acquainted.

I have often had the eggs hatch off in my egg box: the chicks are fine, sturdy, black, hairy little fellows, with blue and red bills (the basal portion red) and with bluish flesh-colored legs and claws.

Dr. Jerdon says that the Purple Coot "makes a large nest of grass, rice stalks, and the like, at the edge of the water, and lays six or eight eggs of a reddish or buff ground, with numerous small dark red and purplish spots."

From Saugor Mr. F. R. Blewitt wrote: "This Coot breeds from June to September. It makes its nest near to the edge of the water in the low rushes or amongst the lotus leaves.

"The nest is composed of weeds and grass thickly piled together, in the centre of which is a slight cavity for the eggs. I am not certain as to the full number of the eggs, which are in color a kind of salmon buff with numerous large and small dark red spots on the surface, and others of a purplish color seen as it were through the shell."

Mr. W. V. Legge remarks of this species : " It breeds in Ceylon in February, March, and April, nesting on the ground near tanks and swamps. It builds a large nest of grass and reeds."

The eggs of this species vary very much in size, the cubic contents of some being fully double that of others. Normally they are, I think, broad and perfect ovals, obtuse at both ends, not unlike a hen's egg in shape ; but some are much more pointed towards one end, and considerably elongated varieties occur. The eggs are of much the same size as, and closely resemble those of, the European Sultana Coot (*P. veterum*, Gm.).

When fresh, the ground color varies from a pale pinkish stone color to a beautiful pure salmon pink, but the rosy tint disappears rapidly, and after they have been some years in the cabinet few of them exhibit any traces of it.

Writing, with a lot of fresh unblown eggs before me, many years ago, I see I said: "The eggs vary a good deal in the ground color, some being greener and others pinker. They also vary a good deal in the amount and intensity of the color of the markings, and while a few have large bold blotches and dashes, in the majority none of the blotches exceed the eighth of an inch in diameter."

The eggs are always pretty thickly spotted, blotched, and occasionally streaked with a rich, almost lake, red, besides which there are a number of somewhat pale purple blotches, clouds, and spots, which have more or less the appearance of lying beneath the surface of the shell. When quite fresh, these are very lovely eggs, but the ground color and markings alike fade in the course of a comparatively short time.

The shells are firm and compact, but the eggs have little or no gloss.

In length the eggs vary from 1·76 to 2·15, and in breadth from 1·23 to 1·45 ; but the average of fifty-three is 1·93 by 1·39.

903.—*Fulica atra*, *Lin.*

The Common Coot breeds throughout India in large jheels and lakes that contain water all the year round. You may search vast lakes during the rainy-season without finding a single bird, but you will always find that these are pieces of water that dry up entirely during part of the year; certainly in no lake in India are there such multitudes of Coots as in the Munchur Lake in Sindh. They may be found in the Himalayas up to elevations of 6,000 or even 8,000 feet, and breed plentifully,—for instance, in the lakes in Cashmere. The nests are sometimes large, conical masses of reed, rush, and weed, very strongly built in the midst of rice or rushes in water from 6 to 18 inches deep, but based upon the ground and rising several inches above the water level. One that I measured was 3 feet in diameter at the base, 2 feet high, and about 11 inches in diameter at the top, where there was a depression or shallow cup some 8 inches across and 3 inches in depth; others built in shallower water are of course proportionally less massive and less broad at the base. Sometimes they are placed on dry ground in thick reeds just at the water's edge, and are not above 6 inches high. Sometimes they are more or less floating, having been built on a platform of lotus leaves and down-bent, over-crossing rushes and reeds.

Whatever the situation, the upper 4 or 5 inches are much the same, composed of rush and flags, with a shallow depression on the top, in lining which rather finer materials than those made use of in the exterior are employed.

In the plains I have found their eggs only in July and August. In the hills they breed in May and June.

The greatest number of eggs that I have met with has been ten, but it is quite common to meet with only seven or eight fully-incubated eggs.

Mr. W. Theobald makes the the following remarks on the nidification of the Common Coot in the Valley of Cashmere:—

"Lays in the second week of May. Eggs, eight in number, long ovato-pyriform. Size, 2·1 by 1·4. Color, pale brownish grey, dotted with reddish black. Wullur Lake. Nest, pieces of dried reeds, about 6 inches long, piled together among reed, and floating on the water."

Long ago Lieutenant Burgess wrote: "I found some of these birds breeding on the Singwa Tank, situate about eighteen miles north of the station of Ahmednuggur, on the 21st August 1849. I obtained three eggs.

"The egg is rather more than 2·1 in length by nearly 1·5 in width, of a stone color, spotted with numberless small specks of brown and some larger spots of dark brown and grey."

The eggs of this species vary very greatly in size and shape, but are very uniform in coloration and character and size of markings. As to shape, they are perhaps typically somewhat broad ovals, slightly compressed towards one end; but eggs pointed towards both ends, like the Little Grebes, or greatly elongated, like those of a Guillemot, seem common in nests in India, though I cannot remember such as anything but extreme varieties in the innumerable nests that I have taken as a boy in the Norfolk Broads.

The eggs have little or no gloss. The ground color is a pale buffy stone color or dull *café au lait*, and the whole surface is closely and evenly stippled over with minute black or blackish brown pin-point specks; besides these a few larger specks and spots,—few, if any, exceeding the size of a common pin's head,—are scattered sparingly about the surface.

The eggs vary from 1·78 to 2·3 in length, and from 1·25 to 1·5 in breadth; but the average of fifty eggs is 1·98 by 1·4.

904.—*Gallicrex cinereus*, *Gmel.*

I think that there is very little doubt that Gmelin's name does apply to this species, in which case it has priority of Latham's more familiar appellation—"*cristatus*."

The Water Cock, so far as our Indian Empire is concerned, is, I think, restricted to tracts where the rainfall is not less than 40 inches and where night frosts are unknown.

It is common on the western coast of the Peninsula, in the eastern portions of the Central Provinces, and in the neighbourhood of the Mahanuddy, throughout Lower Bengal, and all the better-watered countries eastward to

Formosa, throughout Arakan, Lower Pegu, and Tenasserim, and in the Andamans and Ceylon, but it is almost unknown in the dryer portions of the centre of the Peninsula, Behar, and the North-West Provinces (except in the sub-Himalayan zone), the Punjab, Rajpootana, and Sindh.

It is only in Lower Bengal that I have seen the nests; here they breed in July and August in swamps and rice-fields, making sometimes a large Coot-like nest of flags and rice straw in the midst of a dense tangled mass of reeds, rush, and water weeds, and sometimes a comparatively slight one of fine rush and grass on the floating leaves of lotus and singhara (*Trapa bispinosa*).

I have never found any but fresh eggs, and never more than five eggs in any nest, but the boatmen declare that they lay as many as the Coots and Water Hens, *viz.*, eight to ten or even more. None of my correspondents seem to have taken the eggs, except my friend the late Mr. Valentine Irwin, for some time officiating Collector of Tipperah. He sent me four eggs and wrote to me as follows:—

"I took two nests of this species near Commillah, in Tipperah, in August: the one contained two fresh, and the other two half-hatched, eggs. The nests were composed of very fine grass, laid on floating leaves of water plants, in a large jheel. There was about 4 feet of water where I found the nests."

Mr. W. V. Legge remarks of the Water Cock: "It breeds in the Western Province (Ceylon) during the rainy season of the South-West Monsoon, nesting in long grass and constructing a massive nest of rushes and grass. Two eggs sent me by Mr. MacVicar of the Asiatic Society, who identified the bird, was of a reddish white ground, freckled over the whole surface, with light red and reddish brown, over small spots of blue or faded bluish grey; the spots are confluent at the obtuse end, especially in *one* specimen. They measure 1·52 and 1·58 in length, by 1·1 and 1·14 respectively in breadth."

The eggs of this species vary somewhat in size and in intensity of markings, but all that I have seen have been very beautiful. In shape they are moderately elongated ovals, in some cases almost perfectly symmetrical at both ends, in others slightly compressed or pointed towards one end. In texture they are fine and compact, but they are less glossy than most eggs of this family. The ground color is a pale yellowish or fawny stone color, sometimes with a faint greenish tinge, occasionally almost white, and they are commonly thickly blotched and streaked with brownish red or in some only slightly reddish brown and purple, or again in some deep red. The markings are generally most numerous towards the larger end, where they form in many cases a mottled or clouded cap. In some specimens both sets of colors, the brownish red and purple, are slightly dingy; in others they are excessively bright and beautiful. In some the markings are very bold and comparatively widely separated; in others the whole surface of the egg is closely mottled and freckled all over, so as to leave but little of the ground color visible. At times many of the markings are encircled by a broad halo or nimbus of the same color, but much lighter in shade.

In length they vary from 1·58 to 1·8, and in breadth from 1·12 to 1·3; but the average of a dozen eggs is 1·7 by 1·27.

905.—*Gallinula chloropus*, *Lin.*

The Water Hen breeds pretty well throughout India, alike in the plains and in the hills, as high as Ootacamund in the Nilghiris, and up to 6,000 feet in the Himalayas, as in Cashmere, or near Syree below Simla.

In the hills they seem to have two broods, laying first early in May and again in the latter half of July. In the plains I have only found their nests in July, August, and September, and the majority in August. A very small patch of swamp and rush will satisfy the Water Hen as a nesting site.

The nest varies much in size and situation. Sometimes there is no nest at all, only a quantity of rush and rice bent down *in situ* to form a platform to support the eggs. Sometimes it is built up in the water like a Coot's. Often it is in some tuft or tussock of grass in a swamp, ditch, or pond. Occasionally it is wedged up several inches above the water in some Tamarisk or Babool bush growing in a lake or jheel. In these latter cases, and I have seen two such, the nest is rather neater and more carefully built, composed of soft dry flag, with a well-formed shallow circular cavity lined with somewhat finer rush. Generally the nest, when there is one, though firm enough (not nearly so firm, however, as a Coot's) is a rather ragged affair, the lower portion rotting in the water and the upper part very carelessly put together, of dry or half-dry straw, flags, rush, or reed, and not unfrequently an admixture of weeds.

I think nine is the full complement of eggs, but many more, (whether belonging to one or more females I cannot say,) are occasionally met with in one nest. I quote here a few of my old notes:—

"*August* 14*th, Utchulda Jheel, Zillah Etawah.*—We found several nests of this bird. The jheel is a shallow one, entirely grown over with wild rice. Where the rice is thickest, a dozen or twenty stems were bent down to near the level of the water, and there a sort of hollow was made apparently by the bird sitting on the bent-down stems, and in this without any other pretence for a nest the eggs were laid. In one we found nine,—but in others only two and one,—eggs; all were fresh. The ground color was pale drab or stone color, thinly but pretty uniformly spotted and speckled with brownish red or maroon. In some the ground color is more pink; in others more cold and stone-like. Most of the eggs, besides the specks and spots, exhibit a few blotches of the same color; perhaps there is a tendency for there to be more of these blotches towards the large end. The eggs vary a good deal in size and shape, and in the amount of markings, but the general character is rather a long oval, a good deal compressed towards the small end."

"*Rahun, August* 16*th,* 1867.—Found eight more nests, eggs nearly fresh. We did not get more than nine eggs in any nest. Those we took were exactly similar to those above described."

"*August* 23*rd.*—Took a nest at Utchulda Jheel, a moderate-sized one, built of green rushes and rice stems on a tuft of grass. It contained fourteen eggs belonging, apparently, to at least three birds. Four of the eggs were hard-set, ready to hatch off. Three or four were partly incubated, say about nine days. The rest were quite fresh, and the nest seemed not nearly large enough to contain such a number of eggs. It is just possible that they may all have belonged to one bird, and that the different stages in which we find the eggs, have resulted, not from incubation, but from the heat of the sun and of the fermenting materials on which the eggs were laid."

Mr. W. Theobald makes the following remarks on the nidification of the Water Hen in the Valley of Cashmere:—

"Lays in the second week of May. Eggs, ovato-pyriform, measuring from 1·57 to 1·7 in length, and from 1·11 to 1·26 in breadth. Color, pale grey or reddish grey, dotted and spotted with deep reddish brown. Nest, a few weeds heaped on the water among reeds."

This bird lays, as might be expected, similar eggs in India and in Europe. I have compared numerous specimens from both localities, and have found them almost undistinguishable. If any difference is observable, it consists in the preponderance in Indian examples of large well-defined markings, and in the English eggs of minute specks. In size, however, Indian examples are less subject to variation. The shell is compact and firm, with little or no gloss. In shape the eggs are normally moderately broad nearly perfect ovals, slightly compressed towards one end, but somewhat more pointed or elongated examples occur. The ground is a pale stone color, commonly, tinted with pink when fresh. Some eggs are a very pale pinkish drab color; others, almost pale whity brown. They are more or less thickly sprinkled with spots, specks, and moderate-sized blotches of deep red, reddish brown, and purple as the case may be. The larger markings are not unfrequently surrounded by a reddish halo, and the general appearance of the egg is very commonly streaky, owing to the markings being often more or less grouped, along irregular lines running lengthways with the egg.

In length the eggs vary from 1·51 to 1·79, and in breadth from 1·16 to 1·25; but the average of twenty eggs is 1·62 by 1·21.

906.—*Gallinula Burnesii, Blyth.*

I think it very doubtful whether, as already remarked, (STRAY FEATHERS, Vol. I, p. 250,) Blyth's Water Hen is anything but the young of the common one.

Be this as it may, Mr. Theobald sent from the Salt Range the wing and a leg of a Water Hen, and on these fragments and Sir A. Burnes's native artist's very indifferent drawings, Blyth, (JOURNAL ASIATIC SOCIETY, 1854, p. 736,) founded this species.

Now, Mr. Theobald took the nest of the bird of which he sent fragments, and the following are his remarks on the subject:—

"Lays in the fourth week of August. Eggs, measuring 1·62 by 1·15. Color, pinkish cream or grey, spotted and ringed with deep red brown. Nest, of weeds in jheels."

This would apply equally well to the Common Water Hen, and I myself hardly believe at present in the distinctness of *G. Burnesii.*

907.—*Gallinula phœnicura, Penn.*

The White-breasted Water Hen breeds throughout India and Burmah, in the less arid portions of the empire, but it is very rare, a mere straggler in fact, in the dryer portions of the North-West Provinces, the Punjab, Rajpootana, and Sindh. It is common in the Andamans and Nicobars and we got it in Sumatra. I never yet obtained the nest, but when at Bareilly I ascertained that it bred in August, laying its eggs in the midst of the thick bamboo clumps that there encircle so many groves and ponds.

Mr. Blewitt obtained a nest in Saugor on the 11th August, and two towards the end of the same month near Raipoor. From the latter place he sent me one of the nests, a large straggling mass of twigs and dead leaves, some 10 inches in diameter and more than 2 inches in thickness, a mere pad without lining and with but a slight central depression. Each of the nests taken at Raipoor contained five eggs.

Mr. Blewitt says:—

"The White-breasted Water Hen is to be found in numbers in the many tanks and the dense thickets and hedge-rows bordering them, in the districts of Raipore and Sumbulpore. It breeds from, I believe, the middle of July to September.

"The first egg I secured of this species was in August 1868 in the Saugor District; my men found it lying near the edge of a watercourse, the Crows having destroyed the remainder of the eggs and the nest.

"In August 1872, in a thicket surrounding a large village tank, some fifty miles west of Raipore, a nest was found with five eggs. It was some five feet from the ground, ingeniously made and concealed in the branches of a thick-growing bush. The nest was a roughly-constructed mass of twigs, lined with a good layer of dead leaves.

"In July last year, in the same locality, another nest, similarly situated and constructed, was secured, also containing five eggs.

"Again in August, in the high weeds fringing a swamp, a floating nest containing five eggs was taken. This nest, about 16 inches in diameter and 9 inches in depth, was exclusively composed of weeds, and had a large secure egg cavity. The water where this nest was found was about four feet deep."

Mr. E. H. Aitken in a letter which I published in STRAY FEATHERS has given a very interesting account of the nidification of this species in the neighbourhood of Bombay. He says:—

"In September 1868 I was living at Bombay in a house surrounded by very low-lying fields, which were under water nearly all the monsoon, and of course became the resort of various water-birds. Among them this year were half-a-dozen of this *Gallinula*, which very soon made their presence known by their awful cries. I cannot understand Dr. Jerdon dismissing the cry of this bird, if he ever heard it during the breeding season, with the words "has a loud call." Anything more unearthly proceeding from the throat of a bird I never heard. It began with loud harsh roars which might have been elicited from a bear by roasting it slowly over a large fire, then suddenly changed to a clear note repeated like the coo of a Dove. Often in the morning two or three of the birds might be seen in some little open space fighting like young cock-chickens.

"When flushed they seldom flew far, seeming to trust more to their legs than their wings. After a time the cries ceased and the birds were rarely seen, so I concluded they must have their nests now, and set myself to find them. Day after day I waded through the dirty water and long grass (in which I had myself caught gigantic water bugs, nearly three inches long, and other horrible creatures innumerable), searching every accessible bush and likely place along the edges of the fields, but all in vain. The birds were there, for I often flushed them, but for a long time all my efforts to find the nest were utterly baffled.

"It little occurred to me that while I was poking among bushes and grass where orthodox birds of that class ought to breed my Water Hen might be sitting over my head looking down at me. One morning, however, a native cultivator, whom I had told to search also, happened to see one of the birds going up a middle-sized Date Palm that stood out of the water, in the top of which there seemed to be an old Crow's nest. He was soon up too, and after clearing away a good deal of rubbish he took down the nest and brought it to me in triumph. The nest was rather flat, but might have been an old Crow's. It contained four eggs of a brownish white color, not very thickly covered with spots of three colors,—light brown, dark rusty brown, and pale purplish blue. They were rather larger than a Crow's. I was sorry to find, however, that they were very nearly hatched; the whole four were cracked and I could hear the chicks chirping distinctly inside; so I made the man go up again and fix the nest securely in its place, and soon had the satisfaction of seeing the old bird making its way up to it, not flying but running up the rough bark of the Date like a ladder. A day or two after the nest was empty, and at the bottom of the tree I found a fragment of an egg which I have before me now. I was anxious to know how the bird would get its young ones down, but I failed to catch it in the act."

Mr. Eugene Oates obtained an egg near Thayetmyo, but this he extracted from the oviduct of a female he shot, so this does not throw much additional light on the subject.

Mr. W. Theobald makes the following remarks on the nidification of this species in Monghyr:—

"Lays in the first week of August. Eggs, seven in number, long ovato-pyriform. Size, 1·70 by 1·10. Color, dark brownish cream, much spotted and blotched with brownish red. Nest, of weeds in jheels."

Mr. W. V. Legge, writing from Ceylon, remarks: "I have found the eggs of *G. phœnicura* in the Western Province from the beginning of June to the latter part of September. On the edge of the Colombo Lake, a number of nests taken were constructed in a variety of situations: some on the ground, of reeds and grass stalks, others on tussocks out in the water and made of the same materials, laid on the top of the tussock, the stalks of which were beaten down for a foundation; others on the branches of the Screw Pine (*Pandanus*); one of these being at a height of ten feet from the ground. These last were flat and shallow, and made of the leaves of aquatic plants and blades of rushes. As a rule, the top of the nest is almost flat, without any hollow for the reception of the eggs, and the materials of the interior are generally laid across each other, somewhat regularly. One nest, found on the branches of a *Pandanus*, was constructed entirely of the dead stems of a creeper with which the Screw Pine was covered.

"The same remarkable difference exists in eggs of *the same clutch* in this species, as in those of *G. chloropus*; some of them I have seen long and pointed at both ends, some oval, and others stumpy and pointed at the smaller end, being somewhat pyriform in shape. Two specimens from the same nest measured, respectively, 1·65 by 1·23 and 1·57 by 1·18; others I have, range from 1·5 to 1·52 in length and from 1·1 to 1·15 in breadth.

"The ground color is yellowish grey or reddish white; some are marked all over the surface and in a zone round the obtuse end, with yellowish brown and light red spots, and blotches over others of bluish and greenish grey, while others are marked more sparingly with large blotches of the same hues. I have never found more than four eggs in one nest. The chick when first hatched is covered entirely with black down."

The first egg that I obtained of this species was sent me from Saugor by Mr. F. R. Blewitt; it was intermediate in size and coloring between those of *G. chloropus* and *Porzana akool*. The egg was a rather long oval, with little or no gloss and a dull stone-colored ground paler than in the palest specimens of *G. chloropus*, with rather bright, slightly brownish, red spots, specks, and streaks most numerous towards the large end, where besides these there are a number of faint inky purple spots and streaks which appear to underlie the brighter markings.

Other eggs subsequently sent to me by Mr. Blewitt from Raipoor and Mr. Oates from Thayetmyo were somewhat broader ovals, a good deal pointed towards one end; the ground color was a pinky stone color, and the eggs more profusely streaked with bright brownish red intermingled, especially at the large end, where the markings are more or less confluent, with streaks and small blotches of pale reddish purple. These eggs, like the one first described, have scarcely any gloss.

The few eggs I possess vary from 1·43 to 1·7 in length, and from 1·13 to 1·23 in breadth.

908.—*Porzana akool, Sykes.*

I have never seen a nest of the Brown Rail. Mr. F. R. Blewitt, who first took its eggs in 1868, is still, so far as I know, the only oologist who has found the nest. He says: "I must consider the Brown Rail, a rather rare bird. For forty years an ardent sportsman and specially devoted to snipe-shooting, I have only met with it in Jhansie, Saugor and Raipoor; in the Sumbulpoor District, I frequently searched for it in favorable localities, but without success. In the Raipoor District itself the Rail is very rare; only on four occasions did I and my men meet with it. I have met with it almost always singly; on rare occasions in pairs. Its favorite resorts are swamps, the reeds and bushes on the edges of streams, and the tangled amphibious coverts on the borders of watercourses. A favorite place of abode too is the marshy ground occupied by kewrah plants, the branches and broad leaves of which it ascends like *Gallinula phœnicura* with wonderful agility. I have always found it a shy bird, seeking at once a place of security on the slightest alarm. Frequently I have witnessed it half emerge from the rushes, either to feed or change its retreat, and then pause, carefully scanning the neighbourhood before venturing onward. When walking, it ever and anon jerks up its short tail. It runs with rapidity, and when once concealed it is very difficult to flush it; indeed, it would appear rightly to trust far more for safety to its speed of foot and aptitude for concealment than to its powers of flight.

"Slowly and heavily does it fly, and never to any distance, and with good dogs it may be run down and secured. This Rail has a low short plaintive note, which however I have only heard it utter at day-dawn and just before sunset.

"I do not know much about its nidification, for I have taken but few nests. It begins to pair in April and lays from May to August. The first nest I obtained I took at Jhansie on the 7th August 1868. It was placed just above the bank of a small nullah on a low-growing wild 'carounda' bush. It was simply a collection of thin twigs and grass put together, just like the nest of a Dove, only in size a little larger. The nest was placed about the centre of the bush, about six feet from the ground, between and upheld by numerous slender branches. It contained two fresh eggs, and a third was laid by the female bird, which was much injured unfortunately in capturing her, and which died in laying it.

On the 27th May and on different dates in June 1869, in the Saugor District, my men secured three nests, with four eggs each in the high grass and rushes growing on the islets in the Dhussain River, ten miles west of Saugor. The first nest was discovered by one of the party who had to return for the stuffers to shoot the parent bird. When, however, some six hours after they came to take the eggs, they found that one egg had hatched off, and that a second young-one was freeing itself from the shell. The other two eggs, with the female, were secured. Strange but true, the escaped young bird eluded the pursuit of the men by diving and hiding in the reeds in the water. A week after, the second and third nests, with four eggs each, were similarly found. They were one and all rough constructions, exclusively made of the surrounding grass and rushes on the high ground of the islets piled up loosely to the height of about six inches with a slight depression in the centre for the eggs. I think it was about the end of June that, as my men and I were inspecting the islets in this Dhussain River for eggs, four nearly half-fledged brown Rails, of one family no doubt, suddenly dropped from an islet, where they were secreted, into the river. We gave immediate chase and surrounded them, but they baffled us in the grass and rush clumps and mysteriously disappeared. We searched the islet and every likely hiding-place for them without success; at last spying a hole, about a foot in diameter, in the left bank just above the water edge, I told one of the men to insert his arm in it, and to our utter astonishment he brought out, one after the other, the four young birds. How they all managed to elude us and find their way to this supposed place of security, passes comprehension.

"The eggs (which you can best describe, as I have sent you each set as found) were white or pinky white, with brown spots of sizes, and others more or less washed out, of darker hue about the large end.

"I suspect four is the maximum number laid."

The egg of this species, though somewhat larger, strongly reminds us of that of the English Water Rail. The eggs are very perfect ovals, only slightly compressed towards one end; and the shells, though fine, are almost entirely destitute of gloss. The ground color is nearly pure white, with however, when quite fresh, a faint tinge in some of salmon pink, in others of yellow, which however generally disappears after the eggs have been kept a few months. The markings are streaky blotches and spots, usually very dense at the large end, but thinly scattered elsewhere. In color they are purplish or brownish red, and somewhat pale purple, the latter seeming to underlie the former in clouds and streaks.

The eggs, of which I have however but few speeimens, vary from 1·4 to 1·48 in length, and from 1·06 to 1·15 in breadth.

910.—*Zapornia pygmæa*, *Naum.*

Baillon's Crake is pretty generally distributed throughout India, alike in the plains and the hills, up to 4,000 or 5,000 feet, except in Sindh, where it is replaced by the Little Crake (*Z. minuta*, Pall.) It is not very common anywhere in the plains, and is perhaps at times mistaken for a Quail. It is of much the same size, looks on the wing of much the same color, and takes short flights over the rushes, and drops suddenly just like a Quail. Somehow it is certainly, as a rule, overlooked, and, so far as I know, Mr. Brooks and myself are the only persons who have as yet obtained the eggs in India.

This species lays in July and August in the plains of Upper India, and in June and July in Cashmere and the valleys in the lower ranges of the Himalayas, containing suitable rice swamps or marshy pools. It is pretty common near Syree, below Simla. The full number of eggs is, I believe, eight, as we found the fragments of this number of shells round a nest that had hatched off. Six is the greatest number of eggs that I have yet obtained, but then I have only seen two nests with eggs. The nest is made of rush and weed, completely concealed in water-grass, wild rush, and the like, and is apparently usually placed very little above the water level.

At the Achulda Jheel, Zillah Etawah, Mr. Brooks and I took a nest of this bird containing three fresh eggs on August 16th, 1867. The nest was of rush and weed in the midst of grass and wild rice very little above the water's surface. The eggs were oval, rather glossy, of a pale olive brown, thickly mottled and blurred with specks, spots, and blotches (most numerous at the large ends) of a darker shade of olive brown and of a sort of purplish brown.

At Syree, below Simla, at an elevation of about 4,000 feet, I found a precisely similar nest in amongst dense rushes and sedges on the margin of a small swampy pond encircled by rice fields. This was on the 19th June. This nest contained six deeply-set eggs. Next year in July we found no less than three similar nests in the same place, all unfortunately just hatched off.

The egg of Baillon's Crake is very correctly figured by Mr. Hewitson in the third edition of his EGGS OF BRITISH BIRDS. It is oval, slightly pointed towards one end; the shell, of a firm and compact texture, and with a slight gloss. The ground color is a sort of a pale olive stone color, or very slightly greenish drab, thickly freckled and mottled with faint dusky clouds and streaks, which in all the eggs that I have seen were most densely set towards the large end. The dusky markings in some eggs are a sort of pale sepia, but in others have a distinctly purplish tinge. They appear, however, to be at all times dull, inconspicuous, and ill-defined. The eggs vary in length from 1·1 to 1·22, and in breadth from 0·83 to 0·91.

911.—*Rallina fusca, Lin.*

The Ruddy Rail, so far as my experience is concerned, is almost exclusively confined to the moister portions of the empire where the rainfall exceeds 40 inches. Dr. Jerdon says: "It is not very common in the south, but is more abundant in the north;" but, as a matter of fact, it is of *extreme* rarity throughout the Central and North-West Provinces, the Punjab and Rajpootana; and it is only in Lower and Eastern Bengal that I have seen it abundant, or have either found or heard of its breeding in the plains.

Here it lays at any rate from July to September, making a nest of weeds and grass, reed or rush, just like Baillon's Crake and in precisely similar situations, but somewhat larger and more substantial.

Two nests that I found contained five and three eggs respectively, the former slightly incubated, the latter fresh. No one has given me any further information about the nidification of this species. Mr. Oates obtained a pair near Thayetmyo that were doubtless breeding, but he failed to find the nest. He noted, as I did in the case of specimens obtained with nests near Calcutta, that the legs were red.

Dr. Stoliczka also writes to me: "*R. fusca* also breeds in July on the Woolar Lake (Cashmere), and I obtained the egg, which is white (!), but the feet are coral red, not pale green as Jerdon says."

I have only once shot this species in the cold-season, so cannot be positive, but I have an idea that in winter the legs *are* greenish; certainly in the breeding season, when I have killed many, the legs and feet are red, not, *I* should say, *coral* red but dull Indian red. The eggs are moderatly broad ovals, somewhat pointed occasionally at one end. The shell is tolerably fine, but there is little or no gloss. The ground color is pinky or creamy white, and they are more or less streaked, spotted, and blotched with brownish red or reddish brown. There are a number of pale inky purple spots intermingled, chiefly at the broad end, with the red markings, which latter I should note vary much in shade and hue, being in some eggs almost deep red, in others, almost dull brown. The markings are nowhere dense, but they are much more numerous towards the large end.

In length they vary from 1·16 to 1·27, and in breadth from 0·8 to 0·89.

913.—*Hypotænidia striata, Lin.*

Dr. Jerdon says of the Blue-breasted Rail: "It probably breeds in the well-watered districts of Bengal, &c. I found its nest in a swamp below Rangoon, containing six eggs, reddish cream color with dark red and brown spots."

Of the Andaman race, which ought probably to be separated under my name *obscuriora,* (Stray Feathers, Vol. II, p. 302,) Captain Wimberley very kindly sent me two eggs which he had taken in the neighbourhood of Port Blair. They are very regular ovals, slightly more pointed at one end, and with a faint gloss. The ground is a pale brown or pinkish-stone color, and they are rather sparingly spotted, speckled, streaked, and blotched with a somewhat rich red. These markings are numerous towards the large end. Besides these primary markings a number of pale purple clouds and spots are scattered thinly about the whole surface of the egg, mostly however towards the large end. The eggs measure 1·4 and 1·46 in length by 1·1 in breadth, and therefore, although of the same type, they appear to be larger than those of the true *striata,* of which Mr. Swinhoe, who obtained them in Formosa, tells us:—

"The eggs are of a pinkish cream color, varying in shade, sprinkled with purplish grey, and blotched with Indian or Cinnamon red, especially at the larger end. They are for the most part rounder than the eggs of *Gallinula.*

"Length 1·3; breadth 1."

915.—*Leptoptilos dubius, Gmel.*

Of the nidification of the Adjutant not much is known. I only know of its having been found breeding near Moulmein (whence I have its eggs) on cliffs on the Ataran River in the same neighbourhood, in the Soonderbunds, and in the north of the Goruckpoor District. They lay in November, making a huge stick nest upon large trees, as a rule, in localities difficult of access.

They appear to lay two eggs.

Mr. Blyth quotes the following remarks of Captain Sparkes on the nidification of this species:—

"With regard to the Adjutant's nest, I was out surveying in December 1848 in the district of Moulmein, at a place about five miles to the east of the town, and having occasion to ascend some eminence to obtain a good *coup d'œil* of the surrounding country, I determined to climb to the top of the highest peak of the Kharong Hills, a detached mass of limestone rock which rises almost perpendicularly out of an extensive level plain to the height of 600 feet. The ascent was extremely difficult and dangerous, and had never before (so the people assured me) been attempted by an European. On gaining the summit I found that I was immediately over the top of a large tree which sprang from a crevice in the rock below, and on its highest branches was an Adjutant's nest, composed of dry sticks very rudely interlaced (or merely heaped together?), making a flat platform as it were, with little or no perceptible cavity towards the centre. In this were two young Adjutants, about the size of small Geese, covered with a white down and with pouches and beaks ridiculously disproportioned to their size, being extraordinarily large. Both of the young were taken by one of my Burmese servants. In another similar nest in an adjoining tree were one young-one and one addled egg of a *spotless dirty white*, and somewhat larger than a Turkey's egg."

Mr. R. W. G. Frith, Mr. Blyth adds, informs us that he "found both of the species of Adjutant breeding in the south-east part of the Soonderbunds. Their nests were placed on the tops of the loftiest trees, and were extremely difficult and hazardous to approach from the density of the undergrowth and the great number of tigers which infest the vicinity; in fact, the nests were only to be approached by means of the tracks made by rhinoceroses, buffaloes, &c., through the jungle. The large or pouched species breeds about a month earlier in the season than the other, immediately (it would seem) after its arrival from the places which it frequents during the rainy-season. They are then in the finest state of plumage,—ash grey, with the pale wing band complete, and for the most part they have but just perfected their plumage when they leave Calcutta at the end of the rains."

The late Mr. Robert Morell, I may add, informed me that the Adjutants bred on large trees in the midst of dense jungle in the immediate neighbourhood of his own fine estate of Morellgunj in the Soonderbunds.

Colonel Tickell tells us that "on the Ataran River a range of perpendicular rocks of mineral limestone rise sheer out of the water to 600 or 800 feet on the right bank of the river, and some extraordinary, bold, scarped, insulated rocks are scattered also along the opposite side. On the pinnacles of these rocks we observed numbers of Adjutants. These large birds breed here annually, and the rocks are in many places conspicuously white with their dung. There are two species of Adjutant,—*Leptoptilus argala* (our old Calcutta friend) and *L. javanicus* (a rarer visitor in Bengal)—and both breed together in these inaccessible places. The *argala* is noticeably larger than the other, but eggs of the two species are hardly to be distinguished apart."

The late Captain Beavan remarked: "The nest of this species has been observed in India by a near relative of my own, Lieutenant-Colonel Charles Drury, of the Bengal Staff Corps. It contained two young ones, and was found by him at Munsoor Ghât (in the north of the Goruckpoor District but not in the Terai) on a high bank, near a stream, on or about the 15th December 1861. The old birds were put off the nest, which was on a Semul or cotton tree, and a shot fired into the tree made the young birds, which were fully fledged, come out and sit on one of the boughs, whence one was bagged by another shot."

The eggs are for all the world like those of Vultures,—huge broad oval eggs. The shell is typically of a rather coarse texture, but some eggs are comparatively smooth and satiny to the touch. They are dark green when held up against the light, but not so dark a green as those of *Mycteria indica*. The eggs are devoid of markings; they are of an uniform dull or greyish white color.

Four that were obtained for me near Moulmein in November varied from 2·87 to 3·3 in length, and from 2·1 to 2·55 in breadth.

917.—*Mycteria indica, Lath.*

The Indian Jabiru (which is said to be distinct from the Australian species, though how exactly the two differ and what their respective territorial limits are I cannot say) breeds, I believe, pretty well all over the empire in well-watered tracts where large lakes, jheels, or swamps are common, but it is nowhere, that I have seen, numerically abundant.

It lays, the time varying a good deal according to season, from the beginning of September to the middle of December, and Mr. Horne took hard-set eggs as late as the 27th of the latter month.

They build upon large trees, very commonly on large Peepul trees, but I have found the nests on Sheeshum, Semul, and many other kinds.

The nest, always a great platform of sticks, is sometimes enormous; one I found near Badlee was fully 6 feet long by 3 feet broad, and so deep that three fully-fledged young-ones just able to fly were able to crouch in it, so as to be invisible even when the nest was looked at from some distance with binoculars.

Usually the nest is from 3 to 3½ feet in diameter, and with a considerable cavity, not so flat as a Vulture's, but with a deep saucer-shaped depression. It is carefully lined with rushes, grass, pieces of "ban" or grass-rope, water-weeds, &c. One nest that I examined had a regular parapet of mud, the kind of clay we call "*chiknee muttee,*" all round the margin of the cavity, some 3 inches wide and 2 inches high; and Mr. F. R. Blewitt, who watched the birds building this nest, told me that "the birds took more than a month building the nest, taking immense pains to finish it off. When it was nearly ready, they put a sort of rim of clay all round the top of it; the old birds descended alternately to the tank and brought up the mud in their bills, and then standing on the nest, they seemed to manipulate and arrange it with the greatest care with their long bills. These also hatched off three young."

But I have now seen scores of nests without ever seeing a second similar example, so that it would appear to be quite exceptional for them to use mud.

Four is certainly the regular complement of eggs, and one of the four is very often bad, so that they much more often rear *three* than four young-ones, but I have twice found as many as five eggs in a nest.

In some cases I have known of their using the same nest year after year, but my impression is that they very commonly build a fresh nest each year.

These birds have a most remarkable method of paying delicate attentions, or it may be merely of dancing. A pair will gravely stalk up to each other, and, when about a yard or two feet apart will stand face to face, extend their long black and white wings, and while they flutter these very rapidly, so that the points of the wings of the one flap against the points of the other's wings, advance their heads till they nearly meet, and both simultaneously clatter their bills like a couple of watchmen's rattles. This display lasts for nearly a minute, after which one walks a little apart to be followed after a moment by the other, when they repeat the amusement, and so on for perhaps a dozen times. When I first witnessed this curious play on the evening of the 26th December 1866, two pairs performing at the same time within fifty yards of each other on a sandy chur of the River Chumbul, I thought of course that the performers were making arrangements for a future generation, or at least that all this parade would end in some such combination; but watching them closely with the glasses from little more than a hundred yards' distance I discovered that they never actually touched each other, and after a dozen or more such flutterings they all rose and flew quietly away.

Years ago Mr. Brooks wrote to me from Etawah: "On the 20th October 1869 we took three nests, one with four, and two with two eggs each.

"The nests were all on solitary Peepul trees in the middle of plains and in no case near villages,—huge stick nests at the tops of trees, lined with grass and long withered water-plants.

"Whether these were built by the birds themselves or were old nests of *V. calvus* or *H. lencoryphus* is uncertain;" and later he wrote to me that he had never obtained eggs earlier than the 20th October, but the very next year Baboo Kalee Narayn Roy took, within a circle of a dozen miles round Jhujgur, four nests on the 9th, one on the 13th, one on the 14th, and one on the 16th September, all but one of them containing four eggs. The rains had ceased very early, and hence the birds bred early, while in other years when the rains are late, I believe Mr. Brooks is quite right, and that scarcely an egg is to be seen before the middle of October.

Captain G. F. L. Marshall remarks that this species "builds a large nest of sticks at the top of a tree, from twenty to sixty feet high, from August to October, earlier in Saharunpoor, later in Aligurh. In the former district I found young and hard-set eggs early in September. In the latter district I took five fresh eggs from a large nest at the top of a Peepul tree fully fifty feet high; while on the 12th I noticed a bird with a stick in his huge bill, awkwardly arranging a habitation on another Peepul tree; the nest was only half finished. They are sometimes walled round with Karounda thorn."

The eggs of this species closely resemble those of the Common European Stork and of *Melanopelargus episcopus*, but they are certainly larger than those of the latter, and probably exceed average eggs of the former. In shape they are typically broad ovals, compressed towards one end, so as to have a slightly pyriform tendency; elongated ovals and almost spherical varieties are not uncommon. The eggs are dull and mostly glossless, but, though the texture is somewhat coarse, they are fairly smooth to the touch; when fresh, they are nearly pure white, with only the faintest possible bluish grey tinge, but after being a few days in the nest they become soiled and stained, and assume that dingy yellowish white or pale yellowish brown tint so characteristic of Stork eggs.

In length the eggs vary from 2·65 to 3·13, and in breadth from 1·98 to 2·3; but the average of forty-five eggs is 2·91 by 2·12.

920.—*Melanopelargus episcopus*, Bodd.

In Upper India the White-necked Stork breeds from the latter end of June to the end of August, but in parts of Central and Southern India they sometimes lay as early as March, and in other parts they breed during the winter monsoon. The nests are placed in large trees, Peepul (*Ficus religiosa*), Burgot (*Ficus indica*), Tamarind, and Sheeshum (*Dalbergia sissoo*) being, I think, their favorites. The nests are rarely above from twenty to thirty feet from the ground, and vary from 14 to 20 inches in diameter and from 4 to 8 inches in depth. They are densely built of twigs and small branches, and have a considerable central depression, sometimes thinly lined with down and feathers, and sometimes almost filled with straw, leaves, and feathers, in amongst which the eggs are sunk as if packed for travelling. The full number of eggs is four; rarely three more or less incubated eggs are met with.

Captain G. F. L. Marshall writes: "This species is common in the Saharunpoor District. It breeds upon trees in June and July, making a large rude nest of sticks about thirty feet from the ground, deeply cup-shaped and scantily lined with down and feathers, and lays four eggs of a lengthened oval shape, nearly the same at both ends. The color varies from pure white to brown, unspotted, and are in shape very like common Ducks' eggs. I took three fresh eggs in the latter half of June in the Saharunpoor District, one fresh egg in the beginning of July, in Meerut; half-fledged young-ones on the 28th of August, and four fresh eggs in the Etah District on the 2nd of September. Some of the nests were on Sheeshum and some on Banyan trees, but all at the top of the tree."

Mr. W. Blewitt says: "I found several nests of this species in the neighbourhood of Hansi during the latter half of June and the early part of July.

"They were all placed on Peepul or Burgot trees, mostly in the neighbourhood of the canal, and at heights of from 20 to 25 feet from the ground. They were densely built of Keekur and Ber and Sheeshum twigs, and thickly lined with straw, leaves, and feathers. They varied from 14 to 17 inches in diameter and from 4 to 7 inches in depth.

"Four was the largest number of eggs found in any one nest, and, as in more than one instance when this number was found, the eggs were more or less incubated. This would seem to be the normal complement."

Writing from Sholapoor District, Mr. J. Davidson, C. S., remarks: "I found a nest of the White-necked Stork on the 18th of December; the nest was on the very highest branch of a Banyan tree, in a grove. It was a broad platform made of small, light-colored sticks. I saw the birds carrying the sticks the day before, so did not expect eggs; but noticing one bird sitting upon the nest, I sent a man up, and we found one egg. It is shaped like that of the Warty-headed Ibis, or King Curlew, but is about twice as large (*in volume*); color, skim-milk white and rather chalky, and stained; otherwise quite unmarked, and of course fresh. The birds are very rare here, and as my camp is a long way off *now*, I took the egg, fearing I might not be able to re-visit the spot. The birds have, however, returned to the nest, and will probably lay again."

The eggs of this species vary much in shape, but there are three predominant types,—the one a regular somewhat flattened ellipse with perfectly similar obtuse ends, another a broad oval pointed and pyriform towards one end, and the third a long narrow oval more or less pointed towards both ends.

The shells are dull and glossless. When perfectly fresh, of a faintly bluish white, but becoming stained and soiled as incubation proceeds, so that an egg nearly ready to hatch is very commonly of a yellowish earthy brown color throughout. They are quite devoid of any natural markings. Held up against the light, the shell of freshly-laid eggs is a delicate pale green; while in those which have been long sat upon it is a dingy yellowish green. The eggs, as might be expected, are usually considerably smaller than those of the White Stork, and average somewhat less than those of the Black Stork.

In size they vary from 2·3 to 2·66 in length, and from 1·75 to 1·92 in breadth; but the average of fifty eggs measured was 2·5 by 1·83.

921.—*Ardea goliat, Tem.*

I know nothing of the nidification of this species,—the Giant Heron. It is so rare that I have never seen an Indian killed specimen, except those in the Calcutta Museum, obtained by Mr. Blyth, and I have never yet met with any one else who had. But Mr. Blyth tells us, (JOURNAL ASIATIC SOCIETY, 1855 p. 280,): "In the same neighbourhood," namely, in the south-east part of the Soonderbunds, "Mr. Frith was credibly assured that the huge *Ardea goliat,* Ruppell (*A. nobilis,* nobis, &c.), also bred and he expects to be able to procure the eggs of all three species during the next breeding season."

922.—*Ardea sumatrana, Raffles.*

I am by no means certain that the Great Heron of the Terai and Assam is really identical with the Sumatran species; if not, it will stand as *insignis,* Hodgson.

Our Indian Great Heron breeds to my knowledge in the Terai below Darjeeling and Nepal and in the Bhootan Dooars, and I have had a large stick nest, placed high upon a huge tree in a swamp and utterly unapproachable, pointed out to me as belonging to this species; I was also assured that it bred during July and August, which would fully account for no one having ever taken the eggs, since no European could live many days during these months in the localities it affects.

923.—*Ardea cinerea, Lin.*

The Common Heron breeds throughout India wherever there is any water and suitable feeding ground in the neighbourhood, alike in the plains and in the hills to an elevation of 4,000 or 5,000 feet. It breeds at very various seasons, and may very possibly have two broods here in the year, but too little is as yet on record about its nidification in India to enable me to speak positively.

In Etawah I have taken numbers of its eggs in the latter portion of July and in August, and I have had eggs sent me from Hansi taken in March and April, and from Saugor taken in April and June.

So far as my experience goes, this species always builds on trees. I have never yet found its nest in reed beds, which the Purple Heron preferentially affects for nidification.

The nest is a large loose irregular platform of moderately thick sticks and twigs, with a tolerably deep central depression, which, though often quite unlined, is more often, I think, thinly lined with grass.

Sometimes, when laying in March and April, they build in a small party by themselves, but more generally, I think, they lay in India during the rainy-season, and then their nests will be found as a rule on trees, in amongst scores of nests of the Pond Heron, large White Egrets and White Ibises.

At home I have more often, I think, found four than three eggs in Herons' nests, but in this country out of certainly fifty that I have examined I never chanced to meet with more than three.

Mr. W. Blewitt sent me a number of eggs of this bird and remarked: "I have found five nests in the neighbourhood of Hansi this year between the 26th and 29th March, each containing two or three fresh eggs. The nests were all on Peepul and Burgot trees from twenty to twenty-five feet from the ground, and were shallow platforms some 12 to 15 inches in diameter, and 3 or 4 inches in depth, constructed rather loosely of Keekur twigs and lined with a little straw."

Next year he wrote: "I have only found two of the Common Herons' nests this year, and both on the 14th April; each contained three fresh eggs.

"The nests, which measured about 14 inches in diameter and about 5 inches in depth, were loosely built of Keekur and Sheeshum twigs and scantily lined with straw and leaves. The one was placed on a Peepul, the other on a Burgot tree, and both were at a height of about twenty-five feet from the ground."

The eggs of this species are too well known to require much description. They vary much in shape and in size, but are typically nearly perfect, moderately broad, ovals; very spherical and very elongated varieties are common, and pyriform and very pointed eggs are met with. The shell is firm, rather coarse, and entirely glossless. In color they are a delicate sea green or bluish green very thickly set all over with excessively minute pores, which are generally either white or filled with a white substance, the desiccated droppings of the birds I believe. During incubation and after being kept for some time, especially if exposed to the light, the color fades much.

The pores are more or less conspicuous in different specimens. In some they are so numerous and closely set as to produce the appearance of a faint white mottling over the whole of the egg, while in others they are scarcely noticeable.

In length the eggs vary from 2·08 to 2·48, and in breadth from 1·48 to 1·79; but the average of seventy eggs is 2·27 by 1·66.

924.—*Ardea purpurea*, *Lin.*

The Purple Heron (to adopt the established, though by no means very appropriate, trivial name) breeds all over the country wherever swamps and rushy jheels are to be found.

According to my personal experience it lays in July and August, but in the neighbourhood of Saugor Mr. F. R. Blewitt obtained the eggs in April, May, June, and July.

I have seen now some hundreds of nests of this species, and have invariably found them in thick beds of reeds or bullrushes.

Generally from ten to thirty pairs build in the same spot, but occasionally smaller parties are met with. I have never found them nesting in company with other Herons, and in a large jheel where I found both this species and the Night Heron breeding in similar situations, the Night Herons had their clump to themselves and the Purple Herons theirs.

Four is the regular number of eggs, but I have repeatedly taken five.

The account given in the following old note that I extract from my diary is pretty well equally applicable to all the many heronries of this species that I have seen :—

"On August 16th, 1867, when Mr. Brooks and I were out egg-hunting in the Etawah District, we came across a large heronry of this species near the Lohya Bridge of the Ganges Canal.

"In the midst of a large jheel or swamp, in many places grown up with rushes and wild rice, in others with deep and comparatively clear water thickly paved with leaves of the lotus and water-lily, stood two large dense clumps of bullrushes. As we passed within about a hundred yards of these, firing once or twice at Ducks, Nukhtahs, Grey Ducks, and the lesser Whistling Teals, we saw some thirty or forty long necks make their appearance among the waving tops of the bullrushes. It was quite clear that the owners of the necks must be standing on something well above the level of the water, and so we at once sent men to search the clumps,—no easy matter as it proved. It turned out that these Herons, by bending down thirty or forty of the rushes crossing each other in all directions, had made small platforms from eighteen inches to two feet above the water, and on them had built their nests.

"The nests were large, from two to two and a half feet in diameter, loose flat structures, composed of sticks and twigs of the Babool and Sheesum (which composed the bulk of the neighbouring trees), with a very slight central depression, in which without any lining the eggs were laid.

"It was clear that they built from choice in this situation, as many large trees were standing round them on which most of the other species of Heron would certainly have built. The eggs were nearly without exception fresh. Two nests contained five, others four, and the rest a lesser number. There were about twenty couple, and we took forty-six eggs. The note of this bird is less harsh than that of the Common Heron; still, the uproar was great whilst the men were robbing their nests, and the extraordinary chattering that they made, condoling with each other when on re-occupying their nests they found them empty, was most comical.

"The eggs varied very much in size and shape, some being broadly oval, others narrowly so; some having both ends nearly alike, while others were much pointed towards one end. One or two were quite pyriform. The color varied from a deep sea green to a very pale bluish green."

Two years later Mr. Brooks wrote to me from Etawah that "on the 21st August 1869, at a large pond about an acre in extent, I found that a couple of pairs of the Purple Heron had their nests in amongst the reeds in company with *Porphyrio poliocephalus*, *G. chloropus*, *Hydrophasianus sinensis*, and several *Acrocephalus dumetorum*, of which latter, however, I found no nests. The Herons' eggs were nearly hatched."

Mr. W. V. Legge remarks of the breeding of this species in Ceylon : "I have found this Heron nesting on the shores of Bolgodde Lake, in the Western Province, in December, and on the tanks in the south-east of the island, in February and March. It breeds in other similar localities throughout the island. The nests in the first-named place were made on huge Screw Pines (*Pandanus*), the leaves being beaten down at the origin of a branch, so as to form a platform on which the eggs were laid; in the latter district the nests were built of sticks on bushy, thorny trees growing in a partly-dried tank near the celebrated temple of Tissa Maha Rama.

"Around this tank and in similar trees growing in its muddy bottom, hundreds of Herons, Ibises, Cormorants, Darters, Egrets, Spoonbills and Pelicans were nesting, and the din of the thousand cries and screams of these huge birds, as they circled in the air and re-circled and dashed round our heads, combined with the splendid sight they themselves presented, filling the air and lining the trees in long rows on the topmost branches, united to form such a scene as can only be witnessed at these great breeding colonies, scattered about, few and far between, in the wildest parts of our island.

"*Ardea purpurea* consorted in the same trees with *Herodias alba*, *Herodias garzetta*, and *H. egrettoides*, while *Tantalus leucocephalus*, *Platalea leucorodia*, *Threskiornis melanocephalus* and *Falcinellus igneus* kept to another set of trees. *Anastomus oscitans*, the fiercest birds of the whole colony, appeared to decline sharing trees with any other species and monopolized them to themselves. On the same trees with *Pelecanus philippensis*, numbers of *Nycticorax griseus* were nesting."

The eggs of this species closely resemble those of the Common Heron, but taken as a body they are considerably smaller, more pointed, and paler-colored than those of that species. With these exceptions every description of the latter applies equally to the eggs of *A. purpurea*, and individual eggs of each species may be selected that are altogether undistinguishable.

The eggs vary in length from 1·95 to 2·46, and in breadth from 1·42 to 1·75; but the average of twenty-one eggs is 2·17 by 1·56.

925.—*Ardea egretta*, *Gmel.*

The Lesser White Heron, described by Jerdon, is not, I believe, the White Heron of Europe—*Ardea alba*, Lin.

Schlegel, according to my view, correctly discriminates the two species:—

(1).—*A. egretta*, Gmelin and Wagler (nec Naumann, Bechstein, Temminck). Wing, 12·75 to 15·25; Bill, 3·85 to 5·1; Tarsus, 5·3 to 6·3. Legs and feet, brownish black, at times with a reddish or even yellowish tinge.

(2).—*A. alba*, Lin. (*egretta*, apud Naumann, &c.). Wing, 15·75 to 17·55; Bill, 4·93 to 5·5; Tarsus, 6·93 to 8·5. Legs and feet, yellow, often blackish on the toes, or on a part, or even the whole of the tarsi.

Jerdon's bird is clearly the former, and though it *may* occur, and I am inclined to think *does* occur, in India, I do not seem ever to have obtained a specimen of the larger yellow-legged *alba*.

The Lesser White Heron breeds pretty well all over the country, but is in most places numerically scarce as compared with the two White Egrets.

I have only found its eggs in Upper India in July and August, but I believe that in Southern India, like many other species, it breeds in December.

They build loose flat ragged structures of sticks and coarse twigs (with no lining and with a very slight central depression) on large trees, mostly—in Upper India,—on Tamarinds, Neem, and Mangoes.

They always breed in company with others of the tribe,—*intermedia*, *garzetta*, *coromanda*, *Grayii*.

Three is the ordinary number of eggs I think, though I have once or twice found four.

The following account by an anonymous writer, sent me I do not know by whom, in regard to the nidification of this and many other of the following species, at one of their large breeding haunts in Southern India, gives a good idea of how these birds congregate :—

"About fifty miles from Madras and twelve miles from Chingleput in a south-easterly direction is a small village, called Vaden Thaugul, which means literally 'Hunter's Rest,' from *vaden* 'hunter' and *thaugul* 'rest.' To the south of the village lies one of those small tanks, called 'Thaugul' by the Tamil ryots, implying a water-rest or temporary reservoir, from which the village derives its name.

"The Vaden Thaugul tank is situated north north-west of the Carangooly Fort, and is three and a half miles distant in a direct line from the Great Southern Trunk Road.

"The bund, whose greatest height is twelve feet, commences from a piece of high ground near the village, runs for a distance of about six hundred yards in a south-easterly direction, then takes a sharp turn almost at a right angle, and terminates in high ground about two hundred yards further on. The waterspread is limited on the north-east by slightly rising ground overgrown with low jungle, and on the east south-east by high gravelly and rocky ground. The area comprised in the tank is about thirty-five acres.

"From the north-east to the centre of the bed of the tank there are some five or six hundred trees of the *Barringtonia racemosa*, from about ten to fifteen to feet in height, with circular, regular, moderate-sized crowns, and when the tank fills, which it does during the moonsoons, the tops only of the trees are just visible above the level of the water.

"This place forms the breeding resort of an immense number of Water-fowl,—Herons, Shell-eaters, Ibises, Water-crows or Cormorants, Darters and Paddy Birds, &c., make it their rendezvous on these occasions.

"From about the middle of October to the middle of November small flocks of twenty or thirty of some of these birds are to be seen coming from the north to settle here during the breeding season. By the beginning of December they have all settled down; each tribe knows its appointed time, and arrives year after year with the utmost regularity within a fortnight later or earlier, depending partly on the seasons. They commence immediately by building their nests or repairing the old ones preparatory to depositing their eggs. When they have fully settled down, the scene becomes one of great interest and animation.

During the day the majority are out feeding, and towards evening the various birds begin to arrive in parties of ten, fifteen, or more, and in a short time the trees are literally covered with bird-life: every part of the crown is hidden by its noisy occupants, who fight and struggle with each other for perches; each tree appears like a moving mass of black, white, and grey, the snowy white plumage of the Egrets and Ibises contrasting with, and relieved by, the glossy black of the Water Crows and Darters and by the grey and black plumage of the Shell-eaters.

"The nests lie side by side touching each other, those of the different species arranged in groups of five or six, or even as many as ten or twenty, on each tree.

"The nests are shallow, and vary in inside diameter from 6 to 8 inches, according to the size of the bird.

"The Ibises do not build separate nests, but raise a large mound of twigs and sticks shelved into terraces as it were, and each terrace forms a separate nest; thus eight or ten run into each other. The Shell-eaters sometimes adopt a similar plan.

"The whole of the nests are built of sticks and twigs, interwoven to the height of 8 or 10 inches, with an outside diameter of 18 to 24 inches; the inside is slightly hollowed out, in some more and in others less, and lined with grass; reeds and quantities of leaves are laid on the nests. In January the callow young are to be seen in the nests. During this time the parent birds are constantly moving on the wing, backwards and forwards, in search for food, now returning to their young loaded with the spoil, and again, as soon as they have satisfied their cravings, going off in search of a further supply. About the end of January or early in February the young are able to leave their nests and scramble into those of others. They begin to perch about the trees, and by the end of February or the beginning of March those that were hatched first are able to take wing and accompany their parents on foraging expeditions; and a week or two later, in consequence of the drying-up of the tanks in the vicinity, they begin to emigrate towards the north with their parents and friends, except perhaps a few whose young are not as yet fledged, and who stay behind some time longer. Thus in succession the different birds leave the place, so that it is completely deserted by the middle of April, by which time the tank also becomes dry; and the village cattle graze in its bed or shelter themselves under the trees from the scorching heat of the mid-day sun, while the cow-boys find amusement in pulling down the deserted nests."

I have seen scores of similar breeding rendezvous in Upper India, but these are always occupied with us in July and August. Can it be that any of the birds that breed in the south in December and January breed again with us in July? Certainly, during the cold-season, one does not see a tithe of the birds about Etawah, say, that are to be seen during our rainy-season.

Mr. W. V. Legge says:—

"In Ceylon it breeds in company with other Egrets and Herons near tanks and inland waters throughout the wildest parts of the low country. I found it nesting, thus, at Uduwilla tank, near Tissa Maha Rama in the south-east. The nests were made of sticks and quite flat and placed on the lateral branches of low thorny trees. The number of eggs was three or four; color, uniform pale-greenish blue; axis, 2 inches; diameter, 1·39."

The eggs are of the true Heron type, exactly similar in texture of shell and color to those of *Ardea cinerea* and *purpurea*; but, as a body, slightly smaller than those of either of these species, and on the whole perhaps more elongated in shape.

In length they vary from 1·88 to 2·38, and in breadth from 1·4 to 1·6; but the average of a dozen, which is all I have by me, is 2·11 by 1·55.

926.—*Ardea intermedia, v. Hasselq.*

The Little White Heron is generally distributed throughout India, and breeds in the northern portions of the continent in July and part of August, and apparently in the southern portion of the Peninsula which receives the north-east monsoon in December.

It invariably breeds in colonies, generally in company with many other kinds of Herons, Ibises, &c.

This species, *coromanda* and *Grayii*, commonly breed in towns, which I have never seen any of the preceding species of Heron do. The way they pack in their breeding places at times is astounding. In the new city of Etawah there was a small Mahomedan graveyard in which stood a few old Tamarind trees, and on these in my time, that is to say from 1856 to 1866, (most probably they do the same to this day), hundreds of each of the three species above mentioned used every year to breed. On one tree we counted one hundred and ninety-eight nests (and a precious job we had to count them), the greater number of which were occupied. On one nearly horizontal bough we counted in a length of 21 feet eighteen nests, all side by side on the flat surface of the bough, with barely room in most cases for one bird to stand between each nest, and with no room at all in some. We computed that on these few trees not less than seven hundred pairs of birds had nests. The three species did not appear to have quarters of their own in this heronry, as I have often noticed in others, but were all jumbled up together indiscriminately. Year after year I watched them; they began to repair or build their nests after the first good downpour of the rainy-season, that is, some time between the 1st June and the 1st July; the first eggs were laid within a fortnight, and in another three weeks almost every nest had its full complement of four eggs.

The nests are precisely of the same type as those of the preceding species, but are smaller (on the average I should say a little less than a foot in diameter and 3 inches in thickness) and are composed of more slender twigs. Generally they are unlined; sometimes they have a thin lining of sedge and coarse grass.

The eggs of this species are typically very perfect and rather broad ovals, but many eggs are perceptibly compressed or pointed towards one end, and elongated and pyriform varieties occur.

They are of course of the true Heron type already described, but the shells are, I think, somewhat finer than those of either of the three preceding species, and taken as a body they are of a decidedly paler sea or bluish-green than those of any of these latter. In size they are intermediate between the eggs of *egretta* and *garzetta*.

In length they vary from 1·68 to 2·08, and in breadth from 1·32 to 1·52; but the average of thirty-seven eggs is 1·9 by 1·44.

927.—*Ardea garzetta, Lin.*

Of the nidification of the little Egret there is little to be said. They breed in company with the two preceding and other species, make precisely similar but smaller nests and lay very similar eggs, but rather more of them, as I have repeatedly found five and even six in a nest of this species.

With us on the north the breeding season is July and August, but in the south of the peninsula it would seem to be December, while in Ceylon it would appear to be April.

Layard gives the following account of one of the breeding places of this and other kindred species in that island. He says:—

"Half-way between Tangalle and Matura is a large lake, which an official attendance on the Supreme Court of Judicature fortunately enabled me to visit. While the court officers halted for the heat of the day I set off on horseback from the rest-house and galloped to the village, having sent forward my *fidus Achates*, Muttu, over-night with orders to prepare me a boat. This was in waiting when I arrived, a canoe so narrow that I could not sit in it, or rather on it, with my knees together. To remedy this defect, Muttu had fastened a bottomless chair over it, and had woven some coir rope across the chasm.

"The canoe, the only one to be had, was about twelve feet long, worm-eaten throughout, and one end gone entirely, its place being supplied with a piece of fresh turf to keep out the water! Into this I and Muttu and a steersman got, the villagers pushed us off, and when fairly afloat I found the top of the gunwale about three inches from the water, and that my frail vessel leaked in fifty places.

"From my elevated position I counted one, two, three, a dozen alligators, and I anxiously enquired of my black and all-but-nude crew if they were of the harmless kind. A shake of the head and the word "Alliekimboola" by no means re-assured me; it meant they were all man-eaters!

"I looked at my boat, then at the loathsome reptiles floating around me, then at my boat again: it would not do. I must give it up, the risk was too great; the least sudden thoughtless move might overset us. I tried the outrigger with my foot, that was firm; the nigger knew his safety lay there. "Crack" went the collecting gun close to my ear, and down came a specimen of *Nycticorax griseus*, a bird until then new to me; this turned the scale, and I ordered the boat forward; thousands of water-birds rose at the report, and soon the guns were busily employed. It was full breeding season. Herons, Spoonbills, Ibises, Pelicans, &c., swarmed in the air and on the trees, while their nests were so crowded as to touch each other.

"I could only get a few of those nearest the lake; up to them the men climbed from the boat, not daring to venture into the water, which was alive with alligators watching for the young birds which fell from the nests; several times they snapped up the birds which I shot before I could get them, though they only fell fifteen or twenty yards away. The branches of the trees were white with droppings, and the water below thick and putrid: the stench was intolerable. It was with difficulty I could distinguish one nest from another, so as to be certain of the parentage of the eggs; but by remaining quiet I marked a bird to its nest, and then rowed up to it, robbed it, and then lay-to again. The nests seemed to be used year after year, if one may judge from the masses of sticks of different ages of which they were composed. My guide also confirmed this idea, and said the birds were not particular as to the nest, one species occupying it one year, another the next perhaps.

"Unfortunately most of my eggs were hard-set. I was there at the beginning of May. In shape they are equal at both ends and very rounded; they are also all of the pure pale blue color."

The eggs of this species are precisely similar in most respects to those of the last described species, but they are decidedly smaller, and very pale bluish-white varieties approaching the coloration of those of *A. coromanda* are much commoner amongst them.

In length they vary from 1·6 to 1·85, and in breadth from 1·25 to 1·38; but the average of twenty-eight eggs is 1·73 by 1·32.

928.—*Ardea gularis, Bosc.*

The Blue Egret (*asha* of Sykes) is found as a permanent resident along, and in the neighbourhood of, the whole western coast of India from Soomeanee Bay to Cape Comorin and up the eastern coast as far as Paumben (futh er up I have not yet certainly traced it) and in Ceylon.

I have as yet no account of its nidification from any of my own correspondents.

Mr. Layard has recorded that this bird occurs in the Jaffna Estuary and a lake near Chilaw, and he says: "The eggs are of a pale blue color, in shape a rounded oval. Axis, 1·83; diameter, 1·12. The nest is a huge structure of sticks placed in trees by the water-side. Incubation goes on in May and June in the Chilaw Lake. Eggs said to be from four to six in number."

Nests said to belong to this species, pointed out to me on the mangrove trees in Kurrachee Harbour, were very moderate-sized stick nests in the tops of the mangrove bushes, perhaps at most 5 or 6 feet above high water level.

928 *bis.*—*Ardea Sacra, Gmel.*

Within our limits we only as yet know of the Reef Heron's breeding in the Andamans and Nicobars, the Tenasserim and Arracan Coasts. Whether it extends to the Soonderbunds has yet to be proved.

In the Andamans it lays from the middle of April to the middle of June, a little earlier or later according to the time the monsoon sets in.

Mr. Davison remarks: "At the Andamans, at least in Port Blair and its immediate vicinity, it is not nearly so abundant as it is at the Nicobars. At the Andamans it breeds on a small islet of Corbyn's Cove, South Andaman. This islet is low and rocky, and is partially covered at high tide. About the centre it rises into a rugged crag, about fifteen or twenty feet high, full of crevices. It is partially covered with coarse grass, and out of one side grows a stunted ragged tree. In the crevices and in some of the larger branches of the tree these birds build their nests, which are simply platforms of sticks with only a slight depression for the eggs. In the early part of May there were six nests on the island, but I only obtained one egg; the birds had not laid in the others, though they had apparently ceased building. The vicinity of these nests had a very disagreeable fishy smell. All the Herons I saw on this island were the dark ashy ones, and one that was caught on her nest was also of the dark variety. At Trinkut Island the natives told me that they built their nests on the Cocoanut Palms."

To judge from those taken by Mr. Davison and others sent me by Captain Wimberley, which were taken somewhat later in the year, the eggs are of the ordinary Heron type, moderately elongated ovals in shape, the shell rather coarse, much pitted with minute pores, and entirely glossless. The color is an uniform very pale sea green. They have of course no markings or spots of any kind, though as incubation proceeds they get more or less stained and tinged with brownish soils. They vary from 1·59 to 1·85 in length, and from 1·25 to 1·33 in breadth. The average of seven eggs is 1·7 by 1·3.

929.—*Ardea coromanda, Bodd.*

The Cattle Heron breeds throughout the empire, except in absolutely waterless and almost rainless tracts. In Upper India it breeds from June to

August in the rainy-season, which there is brought by the south-west monsoon, but in those parts of Southern India, which mostly get their rains in the north-east or winter monsoon, it breeds in November and December. In Ceylon it seems to breed in April and May, and probably in the case of all these Herons some birds may be found in one part or other of the country breeding in every month of the year.

As a rule, the Cattle Heron breeds in company with the smaller and little White Herons, the little Egret, and the Indian Pond Heron. Sometimes, however, a colony of them may be found breeding alone.

They always, so far as my experience goes, breed upon trees, Tamarinds being, I think, their favorites in Upper India, and very commonly on trees about village ponds, and they make the usual stick nests and lay four or five eggs.

Mr. Adam says, writing from the Sambhur Lake : "The Cattle Egret is very common about this. It breeds in June and July. In a village close to Sambhur I found a breeding place in which some hundreds of birds had their nests."

The eggs of this species are, as a body, distinguished from those of all our other Indian Herons, (as distinguished from the Heronets,) with which I am acquainted, by their very pale color. In other species, and specially in *A. garzetta,* pale varieties occur, but in this species the eggs are always pale, and I have never yet myself taken a deeply-colored one. I have seen eggs of a rich sea green attributed to this species, but in my opinion erroneously so. These birds breed in company with various other species, and, unless the nests are very carefully watched, mistakes as to the parentage of the eggs are sure to occur. I have taken certainly two hundred of the eggs of this species with my own hands, and they were one and all white with a faint blue or green tinge, recalling in tint the eggs of *Micronisus badius* or *Poliornis teesa.* The eggs vary much in size and shape, but are typically rather broad ovals, somewhat pointed towards one end. Some eggs are, however, a good deal elongated, some are pointed at both ends like those of a Grebe, and some eggs are obtuse and symmetrical at both ends. The texture of the shell is compact and fine, differing in no appreciable respects from that of the other small Herons' eggs.

In length the eggs vary from 1·6 to 1·85, and in breadth from 1·22 to 1·4, but the average of thirty-two eggs, now in my collection, is 1·71 by 1·32.

930.—*Ardeola Grayii, Sykes.*

The Indian Pond Heron, perhaps one of the very commonest and most familiar birds in India, breeds everywhere throughout the empire, except in Tenasserim, where apparently, south of Tavoy, it is replaced by *A. prasinoscelis,* Swinh., or at any rate by the species which (whether rightly or wrongly I cannot yet say) I identify as this, distinguished at once in breeding plumage by having the greatly elongated occipital plumes a rich rufous bay color, instead of white.

Dr. Jerdon says : "It breeds on trees, sometimes alone, sometimes several on the same tree, making a rough nest of sticks and laying four or five pale greenish blue eggs ;" and if we add that it often also breeds in company with many of the preceding species, that it not unfrequently lays six eggs, and that these are not typically *pale,* but pretty deep greenish blue, there is little, I think, to add.

With us in Upper India they lay chiefly in July and August, and in Southern India within the range of the north-east monsoon in December apparently.

Mr. W. V. Legge, writing from Ceylon, says that "the Pond Heron breeds in the south of the island in May and June, commencing to lay about the end of the former month; it chooses a lonely spot, such as an island, in a lake to form its colony. In such a place on a large sheet of water between Galle and Matara, on the 15th of June 1871, I discovered a Heronry. The nests were built on a low bushy tree called in Singalese 'Cadool,' a species of *Rhizophora*, and the only kind of tree on the islet. In some trees there were five or six nests; they were constructed of twigs or small sticks, and placed in the forks of branches; there was but little hollow in them for the reception of the eggs, and no lining; in fact, they resembled massive Pigeons' nests. In most there were three, in others two, and in a few four, eggs. Color, pale bluish green; average dimensions of a number of specimens—axis, 1·57; diameter, 1·18. At this time, a few young were hatched; and a fortnight later I found numbers out; they were to be seen standing up in the nests and, when molested, scrambled along the thin branches, perching on these twigs with the greatest care. In the very young nestling, the bill is fleshy red, and legs and feet bright pea-green."

The eggs of this species are slightly elongated ovals, generally perceptibly pointed at one end and not unfrequently at both ends. Pale varieties are uncommon in this species. As a rule, they are a pretty deep sea green or greenish blue, and when fresh darker and greener as a body, I think, than those of any of the other small Herons. In most collections that I have seen, the eggs of these various Herons are much intermingled, owing to the habit of numerous species breeding together, not only on the same trees, but even on the same branches, nest touching nest; but where a large series of eggs of each species have been carefully taken, each will be found to possess a certain character of its own, and in some, as in the present and preceding species, this is well marked.

In length the eggs vary from 1·35 to 1·62, and in breadth fron 1·1 to 1·25; but the average of fifty-five eggs is 1·48 by 1·17.

931.—*Butorides javanicus, Horsf.*

The Little Green Bittern is generally, though sparingly, distributed over the whole country, and is, so far as I have observed, a permanent resident where it occurs. It therefore probably also breeds all over the country in its favorite haunts, the more or less tree-overshadowed banks of canals and streams, (rarely jheels,) where it lurks during the heat of the day in low bushes, clumps of rush or brushwood, or pendant leafy branches overhanging the water, only as a rule making its appearance in the mornings and evenings, stealthily skulking along the water's edge.

But no one seems to have found its eggs but myself; at any rate I can find nothing on record about it. My nest was found in a clump of reed and rush outside the Western Jumna Canal a few miles from Paneeput on the 21st July. It was partly supported on the twigs of a dead sunken Babool branch, and partly on rushes bent down over this, forming a little platform about 2 feet above the water's edge. It was a small stick nest, perhaps 8 inches in diameter, with a perceptible depression in the centre, and contained three perfectly fresh eggs. The bird rose from the nest within twenty feet of me, but not knowing there was a nest there I did not fire at it, but my man who was searching the rushes found it a few minutes later before I had moved from the spot, and then came and pulled and pushed the rushes aside so that I could see it plainly.

Once before this in the Etawah District my meer-shikaree brought me a single egg, together with a specimen of this species, which he affirmed that he had shot from the nest. He had found the nest on the 20th August near Juggernathpoor. The nest, he said, was by itself in a Neem tree overhanging the tank, and was like a Common Pond Heron's, but smaller. I cannot vouch for this egg or for the story: I merely note it *quantum valeat.*

The single egg obtained near Juggernathpoor is a moderately elongated oval pointed at both ends, the color a delicate rather pale sea green. The texture of the egg is fine and compact like that of *Ardeola Grayii,* but the egg itself is smaller than almost any specimen of this latter species that I have yet seen. It measures 1·45 by 1·15. The three eggs that I myself obtained were paler and might be called greenish white, and they varied in length from 1·59 to 1·64, and in breadth from 1·19 to 1·23.

Captain G. F. L. Marshall remarks: "I found this species breeding in the Muttra District in August; on the 30th I found a nest in a Keekur tree at the edge of a jheel near the canal, on a horizontal branch, about twenty feet from the ground. It was a very slight structure of sticks. There were three young-ones nearly fledged, which had left the nest and were creeping about among the thorny branches, but quite unable to fly."

932.—*Ardea flavicollis, Lath.*

I have no reliable information as to the nidification of the Black Bittern. In a manuscript note of the late Mr. Shillingford it is stated that it "breeds in Purneah in Burkuts(?) in July."

The late Mr. Valentine Irwin sent me from Tipperah two eggs which he considered to belong to this species, and remarked: "As to those two eggs of *Ardea flavicollis,* they were taken from a nest in a tree growing in the midst of dense jungle in an old tank. I saw the bird get up at or close to the tree and shot it (it proved to be a female laying), and the man who took the eggs said he saw the bird I shot, sitting on the nest before it rose.

"I should have had no doubt about the matter had not the eggs proved so very like those of *A. Grayii,* and had not a bird of that species risen from the very tree, or perhaps I should call it bush, in which the nest was, almost at the moment he took it."

The two eggs supposed to belong to this species by Mr. Irwin resemble closely, as remarked by him, the eggs of *Ardeola Grayii* and the single egg of *Butorides javanicus* already described. They are moderately elongated ovals, of a very fine and compact texture, but altogether devoid of gloss and of a pale delicate sea green. They are decidedly paler than any that I have seen of No. 930, but, under the circumstances stated by Mr. Irwin, I cannot feel sure that these eggs really belong to the present species. They measure 1·45 and 1·6 in length by 1·15 in breadth.

933.—*Ardea cinnamomea*, *Gmel.*

I have only once myself taken the nest of the Chestnut Bittern, in regard to the nidification of which in India nothing has, I believe, hitherto been put on record. I cannot speak at all positively as to the provinces within which it breeds, because in the *first* place it is a terrible skulker, and in the *second*, during its breeding season,—*i. e.*, the rains,—it wanders to parts of the country where it has never been obtained at any other season: thus during ten years of jheel-and swamp-shooting in Etawah I never once met with it, except during the rainy-season, but during that season it breeds there. In many other places in the North-West Provinces, the Central Provinces, the Punjab, and Rajpootana, though never observed during the cold and dry weather, it may not impossibly occur during the rains and breed, since no one but an oologist goes poking about jheels during the rains.

The only nest I have seen, I found the other day, *viz.*, on the 27th July, in the Botanical Gardens, Calcutta, where I am living. The garden coolies had brought my friend, Mr. J. C. Parker, five or six eggs of this species, of which there are numerous pairs about the gardens, and which (the Herons, *not* the gardens) the people call Lall-bāg, and this led me to search for some for myself. After repeated hunts I found a nest on the bank of one of the tanks in the midst of dense rushes containing three fresh eggs. The nest was propped up on the roots of the rushes, about two inches off the ground, was about seven inches in diameter and two in thickness, with only a slight central depression, and was composed of rush and grass, and lined with rather finer grass.

From Tipperah my friend the late Mr. Valentine Irwin sent me seven eggs and noted as follows:—

"I have now taken two nests of the Chestnut Bittern. The one which I took on the 30th May contained four fresh eggs. The nest was made of the leaves of reeds in short pieces. It was nearly flat, an inch in thickness, and placed in a Cane-bush near the water's edge in a tank. The other, which I took on the 5th June, contained three fresh eggs, and was composed of short pieces of grass and reed laid on the ground, at the roots of some water-plants in an old tank. In both cases I myself saw the female bird sitting on the eggs before I took them, and in the case of the first nest I shot her as she flew off, and now send the skin with all the eggs."

Mr. Brooks, writing from Etawah, says: "On the 24th August 1869 five eggs were brought to me and described as those of a red-colored *Gallinula* or Water-hen. These eggs strongly resembled those of the Little Bittern, *Ardea minuta*, which bird I endeavoured to describe to Ungun, the boy who had taken the eggs, but he said it was quite another bird which flew from the nest, being entirely of a light reddish color.

"The next day I went to the place, which was a pond of about an acre in extent, covered with tall reeds, and with a patch of open water about twenty yards square. After beating the reeds in the vicinity of the nest one of these red birds came out, but out of shot from the place where I stood.

"This I at once saw was no *Gallinula*, for it flew to a tall castor-oil plant growing at the side of a sugarcane field and perched on the top of it. I endeavoured to get within shot, but it was too wary and flew away to a distance. The other bird came out on the opposite side of the pond and flew away a hundred yards or so and returned to the pond. I again had the reeds beaten after I had gone to the other side of the pond, and this time the bird came out past me, a long 45-yards shot for No. 8 shot, but I managed to secure it. It was, as I expected from the egg, a Little Heron or Bittern—*Ardea cinnamomea.*

"I observed that the nest of this bird was built about two feet above the water-level on some reeds which had been bent down for the purpose. The nest was composed of water-grass and lined with coarse grass. The eggs were pure white with, when fresh taken, a very faint tinge of blue. In shape they were a perfect oval.

"On the 4th September among some patches of reed on Jheenjuck Jheel, I again put up an *Ardea cinnamomea,* which I unfortunately shot. The nest was close by and contained only one fresh egg. The bird was the male, and the female flew off. The nest was, as before described, a platform of grass among the reeds, and placed on a few which were bent down. It was about two feet from the water surface and about 9 inches in diameter. It was quite flat without any central depression. The egg in color and form resembled those formerly taken, but it is rather larger."

The eggs of this species resemble closely those of the Little Bittern. They are dull white, sometimes with a very faint bluish tinge, often with no perceptible trace of this. The texture of the shell is very fine and compact, but there is no gloss. In shape the eggs are broad regular ovals.

Setting aside *Ardea minuta,* of all our other Indian Herons with whose eggs I am acquainted those of *Ardea coromanda* approach nearest to those of the present species, but pale as is the tint of the Cattle Heron's eggs, it is quite pronounced, as compared with that of any of the eggs of the Chestnut Bittern that I have seen.

In size they vary a good deal, from 1·2 to 1·42 in length, and from 1·0 to 1·1 in breadth; but the average of seventeen eggs is 1·25 nearly by 1·10.

934.—*Ardea sinensis, Gmel.*

The late Mr. Valentine Irwin sent me an egg of this species from Comillah, Tipperah, and wrote: "I have got a nest of the Yellow Bittern. On the 28th June I was searching some rush and reed at the edge of a tank, about two miles distant from here, for Rails' and Water-cocks' eggs. I found one or two common nests, but got tired and came out on the bank, and I was just changing my boots, &c., when my shikaree called out from a clump of rush, which I had only left a couple of minutes previously, that there was a Paddy Bird on her nest. I went in as I was,—no trousers, no boots,—and there, sure enough, doubled into the smallest imaginable space, was a Yellow Bittern on a little rush-and-reed nest built on the top of a small mud pillar, which projected about six inches above the water level, and which was entirely surrounded by a dense growth of that round sedge Snipe so affect in the cold-weather. I stood within two feet of her, but she did not fly off till I put out my hand to seize her, and then she flapped off, uttering a queer little chuckling, chattering note, and settled on the top of a net stake about twenty-five yards off. The nest contained five dull, dingy, white eggs: three of them were already cracked, the other two I took, and, as soon as we had got about twenty feet away from the nest, the old bird, which had never ceased croaking and squacketting, flopped back on to the nest and immediately became as still as a mouse. The eggs were just like those of the Chestnut Bittern, but rather smaller and rounder I think. I broke one egg in trying to extract the young; the other, wreck as it is, I send."

This egg was a very round oval, with a fine but glossless shell,—dull white, much soiled, and with a barely perceptible greenish tinge. It measured 1·22 by 1·09.

935.—*Ardetta minuta*, *Lin.*

The Little Bittern breeds in several parts of the Himalayas in rushy bordered lakes and swamps, at elevations of from 3,000 to 7,000 feet. It possibly also breeds in Sindh, but there is no certainty as to this. It occurs in the large dhunds there during the cold-season, but not improbably only as a seasonal visitant. In Cashmere at the Wullur, Anchar, and other lakes it breeds abundantly, and it also breeds, I know, having found the nest there with young, near Syree on the Simla Road.

It lays in June. Four is the usual, and five the maximum, number of eggs. It appears always to build in amongst rushes or wild rice, and to place its nest sometimes on the ground, but more generally on a little platform a foot or so above the water's level, formed by bending down the rushes or reed *in situ.* The nest itself is slight and flat, composed of reed and rush loosely put together, 6 or 7 inches in diameter and from an inch to 2 inches in thickness. This, however, I state mainly on the evidence of the native collector I sent to Cashmere, as I have only myself seen one single nest.

The eggs of this species closely resemble those of *Ardea cinnamomea* and *sinensis* (although perhaps they average rather smaller than those of the former and larger than those of the latter). They are moderately broad ovals, pure white, and entirely glossless. The shell is fine, but is closer pitted all over with minute pores, giving it in a bright light a somewhat rough appearance. As incubation proceeds, the eggs get much soiled and discolored. Our Indian eggs are much as *described* by Mr. Hewitson, and the green egg he *figures,* of the history of which he knew nothing certain, was probably not genuine.

The eggs I have vary in length from 1·23 to 1·38, and from 0·97 to 1·02.

936.—*Botaurus stellaris*, *Lin.*

Dr. Jerdon remarks: "It is quite nocturnal in its habits, and breeds on the ground near water, making a large nest of sticks, reeds, &c., and laying, it is said, four or five pale asparagus green eggs."

Dr. Jerdon must here, I think, have been quoting from European authorities. I have been unable to obtain any confirmation of its breeding within our limits.

937.—*Nyctiardea nycticorax*, *Lin.*

I believe that the Night Heron breeds pretty well all over the empire, alike in the plains, and in the North-Western Himalayas up to an elevation of 6,000 or 7,000 feet.

Common as is this species in many parts of the country, it is rarely seen in broad daylight unless one chances upon one of its hiding-places, usually some completely leaf-enshrouded bough, overhanging some stream or pond; but after sunset they may often be noticed, at times solitary, more usually in small parties, winging their way pretty high in air towards some feeding ground, with a straight moderately rapid flight, uttering as they go, at short regular intervals, a single sharp note more like a quack, it seems to me, than a croak, as it is usually designated.

In the plains they breed in July and August, but in Cashmere, Mr. Brooks says, in April and May. They build both on trees and in reed beds; but I have only thrice found the nests, so cannot say which of those situations they commonly affect. When the nests are on trees they are more substantial, and more and larger sticks are used in their construction than when they are placed in rushes or reeds. I could see nothing to distinguish their nests from those of all the other members of the family.

They lay four or five eggs, but we found one nest in a Gooler tree near Juggernathpoor on the 21st August containing six, and all the eggs of this nest were very round and much below the usual average size.

Dr. Jerdon says that the Night Heron "breeds on Palms, Tamarinds, and other trees *in society*," and this I believe to be the usual rule. It is curious that each of the three nests that I have seen were solitary.

Mr. Brookes writes to me: "One of the breeding places of this bird is a clump of fine *Chenar* or Plane trees adjoining the Shalimar Gardens, near Sirinuggur in Cashmere.

"These gardens are on the west border of the Sirinuggur Lake, and, as well as I remember, are about four miles from the city.

"Their elevation is the same as Sirinuggur (5,000 feet).

"I visited this place about the 24th of May, and found a good number of the Common Heron (*Ardea cinerea*) breeding in the trees, and about eighteen pairs of the Night Heron.

"Nearly all the pairs of both species had newly-hatched young, but a few pairs of each had eggs, of which the greater part were deeply incubated, but a few were fresh.

"The nests of the Night Heron were very similar to those of the Common Heron, but smaller; being composed entirely of sticks and twigs in the form of a simple platform, frequently so scanty that the eggs could be seen through the nest from below, As well as I remember, the greatest number of eggs or young in any nest of either species was three.

"The eggs of the Night Heron were smaller and of a more elongated shape than those of the Common Heron, and were of a purer and lighter green. Both of these Herons breed much earlier in Cashmere than in the plains of India.

"Another breeding place of the Night Heron which I found out was at Muniah Ghât, on the bank of the Ganges, half-way between the Tonse River and Allahabad.

"The trees in which they bred were about a dozen Tamarinds close to the Muniah Village. One side of the clump was occupied by a colony of *Ardea alba*, while the other belonged to the Night Herons. There were about a dozen pairs, and they had fresh eggs in the beginning of August, or three months later than the breeding time in Cashmere.

"I have only noticed these two breeding places of the Night Heron, but without doubt it breeds generally over North-Western India in suitable localities, *i. e.*, in well-watered districts. I should observe that in every instance in which I have found the breeding place of Herons or Egrets in India, the trees chosen were close to native houses."

The eggs vary much in shape. To judge from those that I have seen they are typically rather short very perfect ovals, but I have some specimens taken by Mr. Brooks peculiarly long ovals a good deal pointed at one end. In color they are most commonly a pale delicate sea green, very beautiful when fresh, but some are a decidedly bright though light green. They are of course uniform in color and devoid of markings, and like all those of the allied species entirely devoid of gloss.

In length they vary from 1·68 to 2·06, and in breadth from 1·3 to 1·45; but the average of eighteen eggs is 1·92 by 1·35.

938.—*Tantalus leucocephalus, Gmel.*

The Pelican Ibis, or Painted Adjutant, is widely distributed throughout the Indian Empire, but does not occur, so far as I have yet been able to ascertain, in the North-Western Punjab, Western Rajpootana, or Sindh.

It breeds, immediately at the close of the monsoon, in October in Upper India, in February in parts of Southern India.

Though by no means a rare bird, its breeding places are not, in Upper India at any rate, very numerous, and I myself only know of one. I will quote the notes I made when I visited it on two occasions:—

"*January 24th, Gobherdhun, Zillah Muttra.*—We found here a breeding place, the first I have yet seen of the Pelican Ibis. There were perhaps seventy nests on four trees,—three Tamarinds and one Peepul,—in the immediate neighbourhood of this village. The nests were loose ragged platforms, composed of thin sticks and twigs, and small for the size of the bird. At the time we visited them one or two full-grown dingy-colored young were standing on each nest. They were able to fly, for every now and then a young-one would rise from the nest and take a short wheeling flight, but they still had to be fed by the parents, one of which from time to time arrived to feed them. Whenever an old bird approached within thirty or forty yards of the tree, one could easily guess which its nest was by the state of excitement into which the young of that nest immediately got. As soon as the old bird alighted on the nest, the young, which up to that moment had been standing bolt upright at the full stretch of their long legs, squatted down open-mouthed in front of it to be fed, which the old one accomplished by apparently thrusting its large bill half-down the young-one's throat.

"From the size of the young birds, I should fancy that the eggs were laid from 15th September to 15th October.

"*September 22nd.*—Revisiting the Gobhurdhun pelicanry I was sorry to find that we were rather too early. The trees on which the nests have been placed all stand overlooking a pond, which at this season is a good-sized piece of water. At least one hundred pairs of birds must have been about the place, mostly, when we arrived about sunset, standing on or beside their nests, but a few still occupied in fishing or catching frogs in the pond beneath. We sent a boy up who examined all the accessible nests, probably some fifty, but in only three did we find eggs, and only one in each of these."

Some years later Mr. Henry Blewitt kindly visited the spot in October, and procured a fine series of the eggs which he sent me.

Mr. Henry Blewitt says: "The eggs that I send you were taken on the 26th October from the nests that you yourself visited one year when on tour. They are placed, as you will remember, on the branches of large Tamarind and Semul trees which grow at the edge of the Goburdhun Tank. The largest number of eggs that I found in any nest was four, and the smallest two.

"In some nests there were two eggs and one fledgling; in others two eggs and two fledglings; in some two, three, or four eggs, and no young birds. The great majority of the eggs were a good deal incubated, and there were many young birds in the nests, and I should fancy that some eggs must have been laid as early as the 1st October at any rate."

Mr. R. H. Whitten has this year (1874) visited this spot, and reports as follows:—

"On the west edge of the sacred tank at Goverdhun, a town in the Muttra District, thirteen miles from Muttra on the road between that city and Deeg, are some forty or fifty Tamarind and Papree trees, chiefly Tamarind, which are annually frequented as a nesting place by members of Pelican Ibis. These birds make their appearance there early in September, and soon after their arrival, pair off and commence breeding. Some eggs taken in the middle of October were found to be partly incubated. The birds appear to leave with their young brood towards April. The reason why they frequent this place is probably that they are seldom molested and never shot at, the tank being a sacred place, and that frogs and small fish, with which they feed their young, are easily procurable in the tank.

"The place was visited twice this year,—once in the middle of October, and a second time on the 5th of November. On the first occasion many of the nests contained no eggs. Altogether, on both occasions, more than one hundred eggs were taken from the nests.

"When the place was visited, there were about two hundred pairs of birds there. They breed in pairs, each pair having a separate nest. The male bird assists the female to incubate the eggs. The nests were some sixty or seventy feet from the ground, and were composed of dry twigs of Kurreel, Chownker, Plum, Tamarind, &c.; as many as twenty nests were found on one tree. Preference seemed to be given to particular trees. The smallest number of nests in any of the trees chosen to build on was five. The nests are large, measuring as much as 2 feet in diameter, and weighing from 5 to 6 lbs.

"From two to eight eggs were found in each nest. In some of the nests eggs quite fresh were found, in others they were partly incubated. Incubation seemed to have commenced only in the nests where there were more than four eggs. Eggs may be obtained from the middle of October to the middle of November. There are no eggs now there at the middle of December, but the majority of the young birds are not yet fully fledged, though some are able to fly about the nest."

In Upper India, therefore, we may, I think, say that the majority of the birds lay, earlier or later according to season, from the last week of September to nearly the middle of November, that four is the usual complement of eggs, though they sometimes lay as many as eight, and that the young birds are mostly able to fly, though they have not as yet left the nest, by the latter part of January.

The following is Burgess's well-known account of their breeding in the Dekhan. He says: "In another village, about ten miles from the Godavery River, where there are a great number of large Banian trees both outside and inside the walls, I found a community of these birds, which had built their nests on them, probably to the number of fifty.

"The trees inside the walls were as thickly covered with nests as those outside, and the birds, which appeared docile and tame, did not mind the noise of the people passing beneath them. When I visited the village, the young birds were all well fledged and most of them able to fly. The villagers informed me that the old birds move off to the river in the very early dawn, and having caught a sufficient supply for their young return about 8 or 9 o'clock; a second expedition is made during the afternoon. Some idea of the quantity of fish caught by these birds may be gathered from what the people told me, that quantities of fine fish were dropped by the old birds when feeding their young and were eaten by them. A young bird of this species, which I shot in Sindh, disgorged a large quantity of small eels. This Ibis breeds during the month of February. The nest is composed of small sticks, and is placed at the top of the trees; if there are many on the same tree, they are placed pretty close together. They lay three or four eggs of a dull opaque white, nearly 2·6 inches in length by rather more than 1·8 inch in width. The young birds are able to fly by the month of May."

Dr. Jerdon states that "it breeds on high trees, making a large nest of sticks, and laying four white eggs, sometimes faintly blotched with pale brown. Burgess found fifty nests together in some large Banian trees in a village in the Dekhan in February. Further north it is later, breeding in May and June."

This latter requires verification. I have not been able to ascertain that they breed anywhere in India in May or June.

The eggs, which vary much in size and somewhat in shape, are typically elongated ovals, a good deal compressed towards one end. At times they are somewhat pyriform, at others very perfect ovals. The shell is rather fine and compact, of a dull white color, much stained and soiled as incubation proceeds, and occasionally with a few dingy brown spots and streaks. They are entirely devoid of gloss. In some cases they have a *very* faint greenish tinge, which fades soon after the egg has been blown. In size they average, I think, somewhat larger than those of the Spoon-bill, but in general appearance and texture of shell they most nearly resemble the eggs of *Threskiornis melanocephalus*, which latter, however, average very much smaller. Held up to the light and looking into the egg through the aperture, the shells of the present species are a pale bluish green or pale dingy green, while those of *Threskiornis melanocephalus* are a very dark dusky green; on the other hand the shells of the Spoon-bill are a dusky yellowish brown, in this respect assimilating to those of *Anastomus oscitans*; while those of *Mycteria indica* are a green so dark as to be almost black, and those of *Melanopelargus episcopus* a green of nearly the same shade as those of *Threskiornis melanocephalus*, or at times a trifle darker.

In length the eggs vary from 2·58 to 2·95 (though I have one abnormally large egg that measures 3·2), and in breadth from 1·75 to 1·98; but the average of twenty-seven eggs is 2·77 by 1·88.

939.—*Platalea leucorodia*, Lin.

The Spoon-bill breeds, I believe, throughout India, and is common in Sindh and other parts of the North-West, where the Pelican Ibis is rare or unknown.

There is no difficulty about the breeding places of this species : I know fifty at least.

The Spoon-bill is a very sociable bird. It always breeds in companies, at times small, at times enormous, almost always close to where other more or less nearly related species (notably Shell-eaters) have their nests, and very often in the immediate neighbourhood of houses. They always build on trees near to, or on the bank of, some broad lake or swamp, and though I have found many parties breeding far away from human haunts, I have found many more nesting on trees actually in, or in the outskirts of, villages. In Busrehur, a large village a few miles from Etawah, three or four pairs of this species used to build, quite inside the place, on a few Tamarind trees standing inside a little courtyard. At Beenan some thirty pairs bred regularly on some half-a-dozen Peepul trees that fringe the margin of the large jheel on the banks of which the village stands. But the grandest breeding place I ever saw was about a dozen miles north of this in the south of the Mynpooree District, where the zemindars allowed no prowling sportsmen, and indeed soundly thrashed some egg-collectors of mine; and when a few days later I went myself only allowed me to take such eggs as I wanted, because they remembered me as a former Joint Magistrate of the district who had done them a good turn in more than one instance. When I visited this place in August, there was a large oval sheet of water 1½ mile in length, and half this in width, clear, bright, and calm, but dotted over here and there with rushes and lotus leaves. The village stands on a pretty high mound immediately overlooking the lake and towards one end. In front of it, at the water's edge, and on both sides of it, are numerous large Peepul and Tamarind trees; a little further on a group of Neem; then a huge grove of ancient Mango trees runs down to the water's edge; beyond again are groups of Date Palms, then more groves, &c., so that in fact the whole lake is almost entirely shut in by trees all round. This lake, when I had last visited it in March many years previously, to measure up and estimate loss of crops consequent on a terrible hail-storm, was, I should note, one huge wheat-field, except towards one end, just under the village, where a small pond remains in most years all through the hot-weather.

All the trees on the right of the village were occupied by Spoon-bills, certainly at least two hundred pairs were breeding there, but a still larger number of Shell-eaters had nests in the trees to the left of the village. The Neem trees and the Mangos were occupied by myriads of Paddy Birds, Egrets, and White Herons, and a clump of Acacias were tenanted by the Little Cormorants and Darters. In a Kudum tree were several nests of the Whistling Teal. In a huge hollow of an old Mango tree we got a Nukhtah on eight eggs, and the entire lake was alive with these various species.

The zemindars sent boys up to report upon the nests. At least a hundred of those of the Spoon-bills were looked at, and only three or four contained five eggs, or young-ones and eggs; in the great majority there were four. The nests were all of the normal type,—large platforms of sticks, from 2 to 3 feet in diameter and from 3 inches to nearly a foot in diameter.

These birds had bred here from a time anterior to the traditions of the village. Once or twice during the previous fifty years there had been droughts, and the lake had remained dry and no birds had bred there, but next year they had re-appeared and bred as usual. One thing was notable; though the birds were strictly preserved, if I may use the phrase, it was unanimously declared by all the people that during their lifetimes no perceptible increase in the numbers of any of the species had taken place, nor had they ever altered their respective quarters.

Many of the nests were blown down every year, many were pulled down by the boys as they furnished excellent dry fuel, such as the lower classes here like for cooking, but where nests remained intact, all the pair that re-occupied them did was to add a few sticks and perhaps throw down a few of the old ones.

By the end of December, when I next visited the village, very few of the Spoon-bills, Paddy Birds, and Herons, and none of the Shell-eaters, were to be seen, but the lake, already somewhat shrunken, was alive with Pintail, Gadwal, Common and Summer Teal, with a few Widgeon, Mallard, Red-headed and Crested Pochards, and Grey Duck. A large party of the Great White Crane were enjoying the cool clear water and browsing on the water weeds, while a pair of Crested Grebe, of which I succeeded in securing one and which are *very* rare in these parts, were "steaming" about, like a set of monitors, with no part of their hulks above water. It seems to be the rule that both Spoon-bills and Shell-eaters remain only during the breeding season at the spots where they breed; at other times they are spread far and wide over the whole country.

Mr. W. V. Legge, writing from Ceylon, says: "I found the Spoon-bill nesting on trees at the small tank mentioned in my note on *Ardea purpurea* at the end of March. The eggs were almost incubated, so that it begins to lay at the latter end of February with us. The nests were massive, flat, structures of sticks, and were generally placed on the topmost branches of the trees, many small adjacent twigs being *bent* down to form a foundation for the structure."

The eggs vary much in size and in shape, but they are typically elongated ovals, much pointed towards one end. Excessively elongated varieties are common, and somewhat broadly oval specimens occur occasionally; but out of the numbers of eggs of this species that I have seen, I have never yet met with a specimen so little pointed towards the small end as the one figured by Mr. Hewitson in the 3rd edition of his EGGS OF BRITISH BIRDS. The texture of the egg is somewhat coarse, slightly chalky in its nature, and entirely devoid of gloss. The ground color is usually, when the eggs are freshly laid, pure white, but occasionally faintly tinged with pink or yellow; but, as incubation proceeds, they become much sullied and soiled. Spotless eggs occur, but ninety-nine out of every hundred eggs are more or less marked. The markings vary much in extent and character, but they are often almost exclusively confined to the larger end, and they are always largest and most numerous there. The markings consist of more or less smudgy and ill-defined blotches and spots, with here and there a hazy spot, streak, or cloud intermingled. In color and in intensity they differ much, in some eggs they are a clear bright brown, reddish brown, and even almost black, and in others they are feeble dingy, yellowish brown or pale sepia, as if half-washed out. Occasionally both class of markings are found on the same egg, but this is the exception.

In length the eggs vary from 2·4 to 2·95, and in breadth from 1·65 to 1·95; but the average of twenty-nine eggs is 2·7 by 1·81.

940.—*Anastomus oscitans, Bodd.*

The Shell-eater appears to breed throughout the greater part of India, but like the Pelican Ibis does not, so far as I yet know, occur in the North-West Punjab, Western Rajpootana, or Sindh.

I have seen hundreds of their nests, but all in one part of the country—the Central Ganges Doab. There they certainly lay in July and August, and there each pair have their own nest,—a large stick platform built upon high trees with from three to thirty nests on the same tree. Five is, I think, the maximum, and four the usual number of eggs.

In Ceylon, according to Mr. Layard's native informants, it defends its nest pertinaciously; in the north it is less valorous. I have robbed or seen its nest robbed a score of times, and never yet saw it make the feeblest attempt even to defend its *penates*.

Writing of his experience in Oudh, Captain L. H. Irby tells us that the Shell-eater is "common throughout the year. At a place named Kupser on the River Kutna, a branch of the Goomtee, this bird breeds in a large colony on two or three tall trees growing on the banks of the river. The nests are immense stacks or rather platforms of sticks one above the other, several pairs nesting on each platform without any apparent separation of the eggs, which on the 26th June were hard-set on and of a chalky white color, smaller than, but about the same shape as, the egg of *Ardea cinerea*."

I do not question the correctness of this account: Layard tells us much the same about the White Ibises in Ceylon, but still I must note that I personally have never seen any of these joint-stock nests, though I must have visited at one time or another more than a score of breeding places.

I have never seen the nests of this species intermixed with those of others. Very commonly they breed quite away by themselves, and I have only once (on the occasion referred to under No. 939) myself seen their nests in close proximity to houses, but I know that they often do choose trees in the very midst of villages.

Lieutenant C. T. Bingham writes: "On the 9th July last, I found the Shell Ibis (*Anastomus oscitans*) breeding in large numbers in the centre of the village of Umraha, 1½ mile from Jusra, the second station from Allahabad, on the Jubbulpore line.

"The nests were placed on the topmost branches of large trees,—Peepul (*Ficus religiosa*), and Neem (*Melia azadiracta*), being invariably chosen, although there were some fine Mango and other trees in the neighbourhood. The nests were circular platforms, some 4 inches thick and 20 inches in diameter, of sticks, among which I recognized twigs of Peepul, Neem, Ber (*Zizyphus jujuba*) and Babool (*Acacia Arabica*). There was a slight depression in the centre, scantily lined with leaves of the Peepul and Neem, and grass, this lining in the sixty odd nests I examined had been wetted (most likely by the birds returning wet from the neighbouring paddy fields and tanks, which furnished their food), and added by its decay and fermentation to the warmth of the nests.

"The number of eggs varied from two to five in each nest. In one I found two hard-set ones, and in a second six, one (evidently from its color the last laid) very small.

"Their color, normally, is pure white, but as incubation proceeds they get much soiled by the feet and droppings of the bird. The average length and breadth of forty, eggs measured (leaving out the abnormally small one above mentioned) is: Length, 2·20 inches; and Breadth, 1·49 inch.

"As far as I know, they have only one brood in the year, and use the same nests, repairing them year by year. There could not have been less than from 150 to 200 pairs of the birds breeding here. In one Peepul tree I counted no less than sixty-two nests, and not only the nests themselves, but the branches of the tree and the ground underneath were covered with the droppings of the birds.

"One or two of the Ibises made a feint of defending their nests, opening and clattering their bills threateningly, but flying off when my servant, whom I had sent up, got close to them. In one case, however, my man had to push the bird with a stick, and as it flew away I shot it. It proved to be a male."

The eggs are typically oval, of much the size and shape as an English Hen's egg, but narrow, elongated, and pointed, as well as pyriform, varieties occur. In texture the shell is generally close and satiny, being perceptibly smoother to the touch than those of *Geronticus papillosus*, *Threskiornis melanocephalus*, the Spoon-bill, or the Heron; and in this respect, as well as in color, closely approximating to the larger and differently-shaped eggs of *Melanopelargus episcopus*. The eggs, when freshly laid, are a sort of creamy white, entirely free from markings of any kind, but as incubation proceeeds they become the same dirty earth or yellowish brown that the eggs of the White-necked Stork, the Little Grebe, and other species assume.

In length the eggs vary from 2·0 to 2·52, and in breadth from 1·48 to 1·82; but the average of fifty-seven is 2·24 by 1·6.

941.—*Threskiornis melanocephalus, Lin.*

The White Ibis breeds, I believe, pretty well throughout India; but I myself have only taken the nest in the central portion of the Doab, and greatly want notes of the experiences of others in other parts of the country. About Etawah, Cawnpoor, and Mynpooree this species begins to lay as soon as the rains commence, and I have found eggs as early as the 20th June and as late as the 28th August. They breed generally in small companies, often by themselves, and well away from human haunts, but at times in the society of other species and in the outskirts of villages.

I never found, I think, more than a dozen pairs of this species breeding together, and I have more than once found solitary pairs.

Large Banian, Peepul, and Tamarind trees are what they prefer to build on, and they construct a moderated-sized stick nest, perhaps 20 inches to 2 feet in diameter, with a more or less well-marked central depression.

They lay two, three, and very rarely four eggs. Layard says five or six, but I rather doubt this; anyhow I have never found *more* than four eggs, and very seldom this number even, while I have dozens of times *found* two or three eggs ready to hatch off, or two or three young ones in a nest.

From Jhansi Mr. F. R. Blewitt wrote: "On the 1st July 1868 on a large Peepul tree, at its very summit, between four forks of a branch, I found a nest of the White Ibis containing two eggs.

"The nest was about 2 feet in diameter, with a hollow in its centre for the eggs. The exterior of the structure was of coarse twigs of the tree itself; the inner part of finer twigs of sorts. Altogether, it was not so neatly made a nest as that of *Geronticus papillosus*.

"The two eggs are of a dirty chalky white, but, as far as I can observe, without the rusty blotches alluded to by Layard. The eggs, when I secured them, were within a day of hatching.

"In length they measured 2·6, and in breadth 1·8."

I know no species of which the eggs vary more in size than those of our present bird.

The cubic contents of some specimens that I possess are of fully three times those of some others. In shape too the variation is great; typically they are long ovals, much pointed towards one end, but some are nearly perfect ovals. Some are pointed at both ends, like a Cormorant's egg, and some are pyriform. When freshly laid, they are of a delicate bluish or greenish white, but little, if at all, darker than the eggs of *Ardea coromanda*; but during incubation the blue or green tint fades and disappears, and the white gets soiled or stained till some eggs are all brown and dirty, like a hard-set egg of *Anastomus oscitans*.

The majority of eggs are free from spots or markings, but I have met with a few examples delicately spotted with yellowish brown. The texture of the eggs, though slightly coarser, is quite that of the Heron, and I have no doubt that these Ibises are correctly placed by Jerdon in juxtaposition with the Herons, while *Anastomus oscitans* would seem, to judge from its eggs, to need a place amongst the Storks.

In length the eggs vary from 2·1 to 2·82, and in breadth from 1·5 to 1·82; but out of one hundred and twelve eggs only four are less than 2·3; and again only four exceed 2·72 in length, and only one is less than 1·6 in breadth, so that for practical purposes we might say that the eggs vary from 2·3 to 2·72 in length and from 1·6 to 1·82. I may add that the average of the one hundred and twelve eggs is 2·54 by 1·7.

942.—*Geronticus papillosus, Tem.*

The King Curlew breeds everywhere throughout the plains of India.

In Upper India it seems to have two breeding seasons, *viz.*, March, April and August; but I have also known eggs to be obtained in June, July, and September. I cannot say whether the same pairs breed twice in the same year, or whether different birds breed at different times. Perhaps the old birds lay in March and April, and the yearlings not till August. These are points in regard to which further observation is necessary.

In parts of Southern India, as in Sholapoor, this species lays in November and December.

I have never found these birds breeding in society with other species. Twice or thrice I have found two or three nests together, but as a rule they are solitary. They build high up upon large trees, often at the very tops of these, and make a large nest of finer and coarser twigs,—often unlined, but more often thinly lined with straw, grass, or, (Mr. W. Blewitt says,) old rags.

They occasionally to my knowledge,—and possibly often,—take possession of nests previously occupied by the Indian King Vulture, the Indian Fishing Eagle, and the Dusky Horned Owl. Who first made the nests, and whether the Curlews were the intruders, or only re-occupied their own old nests that the Raptors had taken the liberty of using in the interim, I cannot say, but certain it is that from nests from which in March, December, and January, I had taken the eggs of the latter, I again in August took those of the King Curlew.

According to my experience three is the usual, and four the maximum number of eggs.

Mr. W. Blewitt, writing from Hansi, remarked: "I took three nests of the King Curlew this year on the 12th and 18th June. Two nests contained 2, and the third 3 eggs: all were quite fresh. The nests were two of them on Sheeshum trees on the canal bank, at heights of fifteen to seventeen feet from the ground; the third, which was on a Peepul tree, was somewhat higher. All were very similar loose platforms from 18 inches to 2 feet in diameter, composed of stout twigs of the Keekur and Plum, and lined with straw and rags."

Next year he wrote: "On the 3rd and 4th April I found two nests of this bird near Hansi,—the one on a Peepul, the other on a Burgot tree. The nests were high up, from twenty-five to thirty feet from the ground, some 14 inches in diameter and 4 or 5 inches in thickness, constructed of Keekur and Bêr twigs and sticks, and with a few rags and feathers by way of lining, immediately under the eggs of which there were two fresh ones in the one nest and a single one in the other."

Writing from Jhansi, Mr. F. R. Blewitt remarks: "The first nest I got of this bird was at Delhi in the latter end of March with, I think, three eggs. Here the nest and four eggs were secured on the 27th August. The Peepul tree is by preference selected by the King Curlew for its nest, which is placed between two or three forks of a topmost branch.

"The nest is composed of thick twigs of the Peepul and some thorny acacia-like tree on the outside, with an intermediate layer, nearly two inches thick at the sides and base, of finer twigs, all compactly put together. The lining was of grass slightly laid on in the cavity. The outer diameter may fairly be stated at about 18 inches; inner, less by some 4 inches. Egg cavity, about 3 inches deep.

"In color the eggs are of a light pale green. On three of the eggs a few dirty reddish spots appear on the surface. Length, (average,) 2·46; Breadth, 1·86."

Writing from Etawah, under date August 1868, Mr. Brooks said: "I have just had a nest taken of *Geronticus papillosus*, which I saw the birds building some little time ago. I had previously no well-authenticated egg of this species. One, which my shikaree declared to be its egg, is not pyriform like those Mallet took in Rewah in April. These were very pale blue, pyriform like a Curlew's and veined and lined in a zone-like form at the larger end with very pale brown. There were also a few spots of the same color here and there over the egg. One of these eggs is with Hancock, another with Tristram, and the third with my home collection."

Captain G. F. L. Marshall states that in the Alligurh District this species lays in July, August, and September. He says: "I noticed a bird on its nest on the 23rd August; on the 11th September I visited it again and found that the young had flown. It was built of sticks and situated in a very large fork of a Peepul tree about half-way up, and hardly visible from below.—Another nest, with four partly incubated eggs, was found on the 17th September; it was rather loosely made of stick and grass in a small fork at the very top of a large Peepul tree and was reached with great difficulty. The tree was close to a village in the Alligurh District; both parent birds kept circling round over the nest."

Mr. J. Davidson, C. S., remarks: "Here, on the western Sholapoor Districts, a pair or so of the King Curlew are to be met with in every village. I have this year already the following nests:—

"*November 22nd.*—On a small tree, three young, about a fortnight old (apparently).

"*November 28th.*—On a very tall Tamarind, two young about the same age as the last.

"*December 1st.*—Birds building on a small Tamarind.

"*December 4th.*—Nest, three eggs, fresh, on a middle-sized Neem tree among the small branches. Eggs, pale *blue,* with a few slight brownish marks.

"*December 6th.*—Two small young-ones, on a Neem tree in the village.

"*December 9th.*—One containing one young about a day *old;* and another prepared for eggs; the birds busy making love on the side of the nest; a third nest with two eggs, the bills of the chicks protruding, very pale blue, no markings, slightly larger than those taken on December 4th."

Dr. Jerdon says that this species lays from two to four *white* eggs, but this is certainly a mistake.

The eggs are normally moderately long ovals, more or less pointed or compressed towards one end. They are very Heron-like in their appearance, of a beautiful sea green, as bright as those of *Ardeola Grayii.* As a rule, like the Herons' eggs, they are unspotted, but occasionally, as is the case with those of *T. melanocephalus,* speckled varieties, thinly spotted and streaked with brown or yellowish brown, occur. I have even obtained one or two with numerous dingy brown specks, spots, and streaks. In texture the eggs are considerably coarser than those of the true Herons, even more so than those of the preceding species.

In length the eggs vary from 2·24 to 2·77, and in breadth from 1·6 to 1·86; but the average of twenty-eight eggs is 2·43 by 1·7.

943.—*Falcinellus igneus, Gmel.*

I have never succeeded in discovering a breeding haunt of the Glossy Ibis. It is said to breed about some of the Dhunds in Sindh, but so far as the mainland of India is concerned, I have never been able to ascertain any particulars of its nidification.

Mr. W. V. Legge however, writing from Ceylon, remarks: "I found the Glossy Ibis nesting at the end of March 1872, in thorny trees growing round a small tank in a wild part of the south-east of the island: there were, I should say, about half a dozen pairs of the birds present at the heronry and they were nesting partly in company with *Pelicanus philippensis* and *Tantalus leucocephalus* and partly with *Platalea leucorodia* and *Graculus javanicus.* The nests were placed on the lateral, lower branches of the trees and were of the same size as those of the Little Cormorant, constructed of medium-sized sticks, and flat in shape.

"I regret to say that at the date, the 25th of March, that I discovered this large heronry, the young of *F. igneus* were all hatched and well-grown, so that I failed to procure any eggs of the species. The young perched on branches contiguous to, or stood on, their nests, and when I attempted to catch them, scrambled out of the way with considerable agility. I however caught one or two, but I was less fortunate with them, than with the young of other species that I brought away, for I found them dead on the following morning.

"The bill was blackish, crossed by two peculiar-looking reddish white bands; the tarsi and feet were dark leaden, and the plumage brown, with a faint bronze lustre on the wings only."

945.—*Anser cinereus, Meyer.*

I took two eggs of the Grey Lag Goose in the Etawah District in May 1869,—hold hard now, and let me finish my sentence,—but they were laid by a pinioned bird in captivity. So you see you need not have been in such a hurry to accuse me of black-puddings or other sanguineous fabrications.

As far as I know, this species does not in its wild state lay anywhere within our limits. I saw thousands of the Indian Bar-headed Goose, young and old, at various lakes in Thibet, but I cannot remember seeing any Grey Geese.

The only Indian eggs of this species that I have seen were, as already mentioned, laid in captivity, early in May 1869, by the female of a pair of pinioned wild birds in the possession of Ruttun Singh, of Juggernathpoor, Zillah Etawah. The previous year the same bird had laid and hatched a single egg, and had succeeded in rearing the young-one till it was destroyed by a snake when about three months old.

The two eggs laid in 1869 are moderately long ovals, the broadest portion in the centre, and the two ends sloping away thence pretty equally. The shell is glossless, and of a compact, but not a very fine, texture. The eggs are spotless white, with a faint creamy or ivory tinge, and when held up against the light seem pale pinkish yellow. One of the two eggs corresponds exactly in size and shape with Mr. Hewitson's figure. They measured 3·4 and 3·55 by 2·25 and 2·45.

949.—*Anser indicus, Lath.*

The Indian or Bar-headed Goose breeds within our limits only in some of the Thibetan lakes, like the Tso-mourari, Tso-khar, and others which lie in Ladak, at elevations of 12,000 to 14,000 feet, east and north-east of Spiti.

They lay, I believe, in May, and it is, I fear, almost impossible to get over the Passes early enough to secure *their* eggs. Five and twenty years ago, when unfortunately I cared only for sport, I visited several of these lakes during the latter part of June, and at that time they were crowded with good-sized Goslings, many of them large enough to be delicious eating.

950.—*Sarkidiornis melanonotus, Penn.*

I am much in want of further information in regard to the nidification area, if I may coin a phrase, of the Black-backed Goose, or Nukhtah as it is more commonly called.

I think it is partly migratory, for you find it breeding in places where it is never seen in other seasons.

It lays in the North-West Provinces, where alone I have taken its nest, in July, August, and occasionally the first-half of September.

According to my experience, it generally nests in some Mango grove bordering a jheel or broad, placing its nest, which is composed of sticks, a few dead leaves, grass, and feathers, at no great height from the ground, either in some large hole in the trunk or in the depression between three or four great arms, where the main stem (as it so often does in Mango trees) divides at a height of from six to ten feet.

I have altogether found four nests thus situated. Once, and once only, I found a nest in a regular swamp at one end of a jheel in amongst a thick growth of sedge and rush, and in this case no sticks had been used, but the whole nest, which was a foot in diameter and 5 or 6 inches in depth, was composed of reeds and rushes, lined with a little dry grass and a few feathers; this nest had a good deep cavity, I dare say fully 4 inches in depth, while those found in trees had central depressions barely half this depth. Twelve is the largest number of eggs that I have found, and I believe seven or eight to be the usual complement, but on this head see the following interesting remarks by Mr. A. Anderson. He says:—

"The Nukta or Comb Duck (*Sarkidiornis melanonotus*), the Whistling Teal (*Dendrocygna arcuata*), with the Cotton Teal (*Nettapus coromandelianus*) are non-migrant, and breed throughout the plains of India during the "rains," *viz.*, from July to September, according to locality.

"These Ducks, according to my experience, nest, almost exclusively on trees; and they are, so far as nidification is concerned, essentially perching Ducks. They begin to pair early in June, and may be seen flying about in search of a suitable tree almost simultaneously with the first fall of rain, which generally occurs in the North-West Provinces on or about the 18th of that month.

"*Sarkidiornis melanonotus.*—This curious and handsomely-colored Duck deposits its eggs in holes of old deciduous trees, and never, I should say, in grass by the sides of tanks, &c., as stated by Jerdon. The male bird (as in fact do all the others) assists the female in the selection of a site. I have frequently watched both birds flying into trees together, the male uttering a harsh grating noise, while his mate is left behind on inspection duty.

"Although the Nukta nest by preference in trees, I have known their doing so in holes of old ruined forts; as a general rule, they select localities in close proximity to water.

"I have no actual proof of their appropriating old nests, as is frequently done by the Whistling Teal; but it is worth mentioning that a nest of *Haliætus leucoryphus*, which I had examined last winter for the eggs of *Ascalaphia bengalensis* and which was at the time tenanted by this Owl, actually contained seven or eight rotten eggs, which are, in my opinion, referable to this Duck.

"The number of eggs seems to vary considerably; fifteen and twenty have been brought to me from one nest, the advanced state of incubation clearly indicating that in all cases the full complement had been laid. I was present, however, at the capture of a female Nukta on her nest, which yielded the extraordinary number of forty eggs! Of course it is just possible, though highly improbable, that this may have been the joint produce of two birds; but the emaciated condition of the one captured, coupled with the fact that one egg was an abnormally small one, and evidently her last effort, do not favor such a supposition.

"The tree selected was an ancient Banyan (*Ficus indica*), which overlooked a large sheet of water, several miles in circumference; the nest-hole was at an elevation of some 20 feet, 3 feet deep, and 2 in circumference.

"The eggs (incubation was barely commenced) were laid several tiers deep, and those at the bottom were a little soiled from resting on the damp wood. It is highly probable that a large proportion of these eggs are never hatched and that they all become discolored as the process of incubation progresses.

"The thirty-nine full-sized eggs average 2½ by 1¾ inches; they are long obtusely-pointed ovals; and in feel, polish, and texture they resemble a white billiard ball.

"The boss or fleshy protuberance of the Drake gets greatly enlarged during the breeding season, frequently measuring 2·2 × 2·4 inches at the base."

Captain G. F. L. Marshall says: "I took one egg on the 20th July from a Mulberry tree. I found an egg of this species in a nest of *Ciconia episcopa*, with three eggs of the latter bird: this is, I believe, an unusual occurrence."

The eggs are regular ovals, only slightly more pointed at one end than the other. The texture of the shell is wonderfully close and compact, and, when fresh, the eggs, both in color and appearance, seem made of polished ivory. As incubation proceeds a good deal of the gloss disappears, and the delicate ivory white becomes stained and sullied, but even to the last they are one of the smoothest eggs to the touch that we have.

The eggs vary in length from 2·22 to 2·48, and in breadth from 1·65 to 1·75; but the average of the fourteen eggs that I now have by me is 2·3 by 1·7.

951.—*Nettapus coromandelicus, Lin.*

The Cotton or White-bodied Goose Teal, or as many people call it the Goslet, seems to breed throughout the empire, not excepting the Andamans, but not, so far as I know, ascending the hills to any elevation.

I have only found the eggs in July and August, and towards the end of the latter month the young are to be seen about everywhere. I have seen many nests, all in Mango trees, in or at the edge of swamps or ponds, in hollows of large decayed branches, and with very little lining, but it would appear from the remarks of others quoted below that these are by no means the only situations they affect for nesting. I have never found more than twelve eggs, and from eight to ten appear to me to be the usual full complement.

Mr. F. R. Blewitt, writing from Jhansi, says of this species: "It breeds in July and August.

"Just above the village of Burogaon is a large lake from which several eggs of this Goslet were brought. The eggs were collected in the two months on different occasions. It makes a semi-floating nest on the water, among the rushes or lotus leaves, of weeds, grass, &c., all together, filled up several inches above the water level.

"The many boatmen of the lake stated that this Goslet breeds there every year, and at the Talbeehut Lake also the boatmen affirmed the same.

"The eggs are of an ivory white in color, having an average length of 1·7 and breadth 1·3. I am not certain as to the maximum number of eggs."

Dr. Jerdon says: "It breeds generally in holes in old trees, often at some distance from water, occasionally in ruined houses, temples, old chimneys, and the like, laying eight or ten (sometimes, it is stated, as many as fifteen) small white eggs."

Mr. A. Anderson remarks: "This species nests in holes of trees and old ruins, and never, according to my experience, in old nests or on the ground.

"I once had an opportunity of watching a pair in the act of selecting their habitation. They invariably flew into the tree together; and while the female used to enter the hole, to reconnoitre, as it were, the male sat on a bough watching for her exit. No sooner did she make her appearance than they both flew away together, giving utterance to a peculiar cackling sound, which has been pronounced to be like the words "Fix bayonets." Their visits used to be repeated at intervals of every fifteen or twenty minutes. The Drake never went into the hole; and I am therefore inclined to believe that he does not lend his aid in the performance of the duties of incubation.

"The greatest number of eggs laid by the Goslet of which I have a record, is twelve. This nest was taken by Mr. Spry at Budaon in August last. The hole occupied was at no great height; but it was 3½ feet deep, and only large enough to admit of ingress and egress; the contents had to be removed by means of an iron spoon, something like a soup-ladle with an extra long handle.

"The eggs are obtusely pointed ovals, and certainly large for the size of the bird; they measure 1·7 by 1·3 inch, and in shape and color are exactly similar to those of the Whistling Teal!"

The eggs are oval, scarcely more pointed at one end than the other. They are miniatures of those of the preceding species, of a delicate ivory white color, very smooth to the touch, but scarcely so glossy as those of the *Nukhtah*, and as a rule much less liable to become soiled during incubation than those of this latter species.

In length the eggs vary from 1·54 to 1·75, and in breadth from 1·17 to 1·38; but the average of twenty-six is 1·7 by 1·29.

952.—*Dendrocygna arcuata*, *Cuv.*

The Whistling Teal or Common Tree Duck appears to breed in most parts of the empire, is very common at the Nicobars, and has recently been obtained at the Andamans also.

Further information as to its nidification is required, because it certainly breeds in numbers in some localities, where even a straggler is scarcely to be seen at any other season. In the Etawah District, for instance, where I must have taken or seen dozens of its nests, I have scarcely ever seen a specimen, except during the rains.

I have only seen its nests in this district, in Mynpooree, Cawnpoor, Muttra, Allyghur, and Meerut, but I have had the eggs sent me from Raipoor and Jhansi.

I have found its eggs in two situations,—in hollows in trees or between the larger branches of these, either unlined or slightly lined with grass and feathers,—or in old Crows' and Kites' nests, which it lines in a similar fashion. In all cases the trees in or on which I have found it nesting have been in the immediate proximity of water. This however, as will be seen further on, is not at all the rule elsewhere. With us it lays in July and August, and a few eggs may be found even during the first-half of September, but the majority have, I think, hatched off by the first of that month. Twelve is the maximum number of eggs that I have seen in any nest, and ten or eleven are, I think, the usual complement.

Dr Jerdon tells us, (whether as the result of his own observations or on the strength of the statements of others it is impossible to say,) that the Whistling Teal "generally perhaps, breeds in the dryer patches of grass on the ground, often at a considerable distance from water, carefully concealing its nest by inter-twining some blades of grass over it. Occasionally however it builds its nest in hollows of trees, and not unfrequently in nests made of sticks, and that have in some cases at all events been used by Cormorants or small Herons. The eggs are generally six or eight in number."

Col. Tickell again says: "Whistling Duck ('Sillee' or 'Saral'). Nest, large, flat; when on the ground made of reeds, flags, &c., hidden in the rank grass, sometimes half-floating on the water, often in the hole of a Mango or

Peepul tree, at the base of a large fork, or in a hollow on the summit of the trunk, when it (the nest) is composed of twigs with hay. Eggs, numerous, from six to eight or ten. Shape, a little lengthened, with both ends blunt; pure white, with a blush of faint rose color and clouds of opaque white. Size of male egg, 2 by 1·44; female egg, 1·82 by 1·5. July and August."

I may note that although I reproduce the passage as it stands, I do not in the smallest degree believe in the possibility of discriminating the sex of the bird that will be produced from an as-yet-unincubated egg.

Captain G. F. L. Marshall remarks that "this species builds in trees a nest of sticks, and lays about seven to ten eggs of a white, fawn, or olive brown color. A nest found on the 25th of July near Bolundshahr contained only one egg on which both the parent birds were sitting. It was a tolerably compact structure of twigs in a Keekur tree at the edge of a Jheel about eight feet from the road; it was at the side a metalled road near a large town. I shot the male, but missed the female with the left barrel. When I returned next day, there was a pair of birds on the nest again, so that the female had apparently provided herself with a fresh mate in that short interval. In another case the nest was swarming with ants and maggots."

Mr. A. Anderson remarks: "Jerdon could never have found a full clutch of the eggs of the Whistling Teal, or he would not have limited the number to "six or eight" (Birds of India, vol. iii, p. 790). Ordinarily this Duck lays fully a dozen eggs; but I am indebted to my friend Mr. Fynes-Clinton for two clutches of twelve and fourteen respectively, which he took from the same nest; whether these were laid by one or two birds must of course remain an open question.

"On the 29th June 1872, Mr. Clinton flushed a bird from the top of a low Date Palm (*Phœnix dactylifera*), and found the first-mentioned lot (twelve); on the 13th July he happened to visit the same locality, and to his surprise found the second clutch in exactly the same situation; the Duck was on her eggs. Now the dates are so coincident that, supposing these twenty-six eggs to be the produce of two birds, the second one must have laid her first egg the very day after the removal of the first batch.

"As to situation, the choice may be mentioned in the following order:—
(1*st*,) depression at the fork of the lower branches of large-limbed trees;
(2*nd*,) old nests, particularly those belonging to Crows, Herons, &c.; and
(3*rd*,) thorny scrub or grass on the edge of swamps.

"The eggs measure 1·9 by 1·5 inch, and when fresh are of a milky white color; the inside membrane is a delicate salmon pink tint."

The eggs of this species are usually very broad ovals, often slightly compressed towards one end. In texture they differ much from those of the Black-backed Goose and Goose Teal already described. They lack the exquisite smoothness and satiny feel of these latter, and instead of the delicate ivory white they are, when fresh, nearly pure white, becoming no doubt yellowish or brownish and sullied as incubation proceeds. Here and there one may exhibit a slight gloss, but as a rule this is almost entirely wanting.

In length the eggs vary from 1·72 to 2·0, and in breadth from 1·4 to 1·6; but the average of forty-four is 1·86 nearly by 1·49.

953.—*Dendrocygna major*, *Jerd.*

The Larger Whistling Teal is, as Jerdon says, a somewhat rare bird in most parts of the country. It belongs, as far as I can judge, to the very humid tracts, spreading, during the rainy-season only, into somewhat dryer districts. In Sindh I only know of its occurring as a rare visitant about the larger lakes and canals during the monsoon. In the Punjab and Rajpootana I have not heard of its occurrence. In the North-West Provinces I have only known it to be found in the Terais and sub-montane districts. In Oudh it is not uncommon in the rains, but whether it is a permanent resident there I cannot say. In the Central Provinces I have only heard of its occurrence in the Jhansi and Saugor Districts during the monsoon, and it is from Saugor that I have received the only eggs and almost the only specimens I possess of this species.

One nest was found on the 15th August: it was a large hollow in an old tree overhanging a large piece of water, rather liberally lined with a few twigs, a good deal of grass, and some feathers. It contained seven eggs, a good deal incubated.

The eggs, except for size and a somewhat superior smoothness, are precisely like those of the Common Whistling Teal,—very broad regular ovals, moderately smooth to the touch, but with no perceptible gloss, and of a dull slightly yellowish white color.

In length they vary from 2·12 to 2·25, and in breadth from 1·65 to 1·75.

954.—*Casarca rutila, Pall.*

The Ruddy Sheldrake, or Brahminy Duck, as in India it is universally called, breeds throughout the high central portion of the interior of the Himalayas. It nests always, the people say, in holes in cliffs overhanging, or at any rate in close proximity to, streams, lakes, or pools, at an elevation of not less than 12,000 and often as high as 16,000 feet.

I have seen the old birds with crowds of tiny ducklings on several of the Thibetan lakes towards the end of June, but this was in old days when I cared for none of these things, and I never climbed up to examine a nest-hole, of which many have been pointed out to me in the cliffs, conspicuous by the droppings of the birds.

In the account of the first Yarkand Mission we say that this species was first noticed at the hot springs above Gokra, at an elevation of 16,000 feet. There they were seen on small lakes that are dotted about on the Salt Plain and all along the Karakash River. The young were at that time, —July,—scarcely able to fly; when approached, the mother made them all dive by swimming and flapping on to each of them as soon as it showed itself above water. The mother also pretended to be wounded, and lay on the water every now and then with wings spread out as if unable to fly. All along the Karakash Valley and also on the high table-land, wherever there was water overhung by cliffs, there numbers of Brahminy Ducks with broods of young-ones were seen, and holes in these cliffs plastered over with droppings were pointed out by the Kerghiz as the places in which they had bred.

I do not know that any European has as yet taken their eggs within our limits. They have mostly all left the plains by the 15th April, and I should judge that they laid early in May, before in fact it is possible to cross the Passes to the places they breed in.

Long ago Dr. Adams recorded that he had "found the *Anas rutila* breeding among the rocks surrounding the fresh and salt-water lakes of Ladak, and that *Bernicla indica* and *Anser albifrons* were seen in great numbers in June and July on the Chimmanraree (Tso-mourari) Lake. These lakes are about as far north as it is safe at present for Europeans to travel."

Mr. F. R. Mallet remarks *in epistolâ :* "As to the Brahminy Ducks (*Casarca rutila*) I first observed them in Thibet north of the Niti Pass, at an elevation of about 14,000 feet, on a shallow stagnant pond. There were the old pair and eight young-ones unable to fly. I bagged all the latter, but the old parties did not see the fun of it at all and kept out of range. This year I first saw a solitary one in Spiti on a small shallow pond about 13,000 feet.

"In neither of these cases was there much vegetation; in fact, almost none. Afterwards we saw perhaps two dozen old and young in the streams flowing into the *Indus* in Ladak (part of the Cashmere territory). These streams are rapid but smooth, and bordered by coarse grassy plains; from a mile to two miles wide, marshy near the middle. They contain plenty of small fish, and the Ducks I shot near the Niti had a very fishy taste.

"These streams are about 14,000 to 15,000 feet above the sea, and there were lots of Geese on one of them.

"I never saw 'Brahminies' on the rough streams and torrents, except *north* of the first high ranges of the Himalayas, at elevations of 13,000 to 15,000 feet.

"They are not found in the outer high ranges of the Himalayas themselves, but in Thibet, Ladak, &c."

958.—*Anas boschas, Lin.*

The Mallard only breeds within our limits, so far as we yet know, in the marshes and lakes of Cashmere. There it nests abundantly, building its coarse grass nest, more or less lined with down and feathers, in clumps of rushes, beneath the overhanging grass at the edges of watercourses or even in rice fields.

It lays in May and the first week in June. Twelve is the largest number of eggs seen in any nest by my collector (a native), who examined hundreds of them. There is quite a trade in the eggs of this species and *Aythya nyroca* at Sirinugger, and my man went out daily almost for a month in one of the egging boats. The boatmen told him that they *had* found as many as sixteen eggs in one Mallard's nest!

Mr. Brooks says *in epistolâ:* "The Mallard's nest I took was amongst rushes in a rather dry spot of one of the Cashmere lakes; it was built of straw and dry rushes, and lined with the bird's own down."

Mr. W. Theobald makes the following remarks on the nidification of this species in the Valley of Cashmere :—

"Lays in the first week of May. Eggs, long ovato-pyriform. Size, 2·27 by 1·55. Color, dirty white with a tinge of yellowish green near sepia."

The eggs of the Mallard vary a good deal in size and color. In shape they differ little, and are moderately broad regular ovals, not unfrequently slightly compressed towards one end. In texture the shell is very fine and smooth, and has a faint gloss. The egg is quite devoid of markings, and when freshly laid has a dull pale greenish tint; but as incubation proceeds it changes to a very pale drab or dingy stone color, and every intermediate shade is observable. In size they differ little from those of the Grey Duck, but the latter are always whiter and never exhibit the green tinge so conspicuous in the freshly-laid egg of the Common Wild Duck.

The eggs vary in length from 2·1 to 2·38, and in breadth from 1·5 to 1·72; but the average of thirty eggs is 2·23 by 1·6.

959.—*Anas pœkilorhyncha*, *Gmel.*

The Grey Duck breeds, I believe, in suitable localities all over the plains of India. Common as it is, its nest does not appear to be often found; very few of my correspondents have sent me any notes in regard to its nidification, (though two or three have sent me eggs,) and I have myself only found two nests.

The one which I found on the 1st August at Rahun was placed on a drooping branch of a tree, which hung down from the canal bank into a thick clump of rushes growing in a jheel that, near the bridge, fringes the canal. The nest was about nine inches above the surface of the water, was entirely concealed in the high rushes, and was firmly based on a horizontal trifurcation of the bough. It was composed of dry rush, and had a good deep hollow in which down, feathers, and fine grass were intermingled. The nest was at least a foot in diameter, perhaps more, and I suppose 2 inches thick in the centre and 4 inches at the sides. It contained three fresh eggs.

The second nest I found on the 29th August in a large jheel, half-swamp, half-lake, in front of Moonj, (also in the Etawah District) on the ground in a low thick bed of sedge on an island about two yards square, to reach which a man had to swim. I did not see the nest (though I saw the bird flushed and the eggs taken), but it was described to me much as I have described the nest that I myself examined. The nest contained six fresh eggs.

Captain G. F. L. Marshall writes: "I found a nest in the Muttra District on the 31st August 1871. It was a well-made cup-shaped nest of grass, fresh plucked, about 9 inches across,—3 inches deep, and the sides fully 2 inches thick; it was sparingly lined with down and feathers from the breast of the parent bird, and contained seven brownish white eggs. It was placed on the ground in a slight hollow among thick grass, about 18 inches high under the trees on the outer side of the canal bank, and about a yard from the edge of a small excavation pit, full of water. The bird was on the nest, and when roused flew with difficulty."

The eggs are of the usual broad oval type, in texture compact and smooth, but without the polish and gloss which characterises the somewhat similar eggs of the *Nukhtah*. In color too they are when fresh white or greyish white, and never, so far as I have yet seen, exhibit that creamy or ivory tinge already noticed in the case of the *Nukhtah* and Cotton Teal.

As incubation proceeds, they become yellowish and sullied, and hard-set eggs are occasionally a very dingy and pale earth brown.

The eggs vary in length from 2·08 to 2·3, and in breadth from 1·65 to 1·8; but the average of nine eggs (all I now have left,) is 2·16 by 1·71. To judge, therefore, from my few specimens, they are shorter and broader than those of the Mallard.

960.—*Anas caryophyllacea, Lath.*

Of the Pink-headed Duck Dr. Jerdon says: "It breeds towards the end of the hot-season, and its eggs are said to be laid amongst thick grass not far from the water."

In the late Mr. Shillingford's manuscript notes I find it stated that he found this species breeding in the southern portion of the Purneah District in grass jungles in June and July, and that he had often taken the eggs; but he did not unfortunately describe them, and his entire collection of birds and eggs fell after his lamented death a prey to insects and rats.

This species is unknown in Western and Northern India. It occurs in Eastern Oudh and in Goruckpoor and Bustee, but nowhere else that I know of in the North-West Provinces. I have no record of its occurrence in Guzerat, Cutch, Kandeish, or any part of the Central Provinces, in Rajpootana, Sindh, or the Punjab. It does occur in Chota Nagpore, as Beavan records it from Manbhoom, but it is of extreme rarity there. But throughout Lower and Eastern Bengal it is very common, and I am surprised that none of my correspondents appear as yet to have found its nest.

963 *bis.*—*Mareca gibberifrons, Müll.*

The White-throated Widgeon breeds (and indeed occurs) within our limits only in the Andamans. I have only one record of its nidification and a single egg, both of which I owe to Captain Wimberley.

The nest was found in August: it was composed of grass, and was placed in a paddy field near Port Mouat, the only locality, with which we are yet acquainted, in the group where this species is always to be met with.

The egg is typical, a very perfect broad oval in shape, with a very close-grained smooth shell, devoid of gloss, and of an uniform delicate cream color. It measures 1·93 by 1·43.

965.—*Querquedula circia, Lin.*

The Garganey or Summer Teal is to most parts of India only an autumn and cold-weather visitant. It returns very early. I have shot it repeatedly during the third week of August, but it certainly leaves every part of Upper India during the hot-season.

There is some reason, however, to think that it may breed in Tenasserim. Writing thence, Major Tickell says: "Another singular occurrence is the breeding of the Garganey in this part of the country (Moulmein). I have a young one now alive, which was brought to me just fledged from a pond or small lake about twelve miles off."

Mr. Blyth added, with reference to this statement, that "the Garganey breeds sparingly no doubt in India, as well as in Burmah and Tenasserim." I have failed to obtain any confirmation of this surmise; indeed, all the evidence from all parts of the country that I have been able to accumulate points the other way, and I may add that no one since Colonel Tickell has apparently been able to learn anything of its breeding in Tenasserim. I cannot find out that any one has ever seen it during the summer at the Thibetan lakes, but I have numerous specimens shot in the interior of the Himalayas, during the spring and again during the latter half of August, thus apparently showing that these birds, for the most part, go north beyond the hills to breed.

969.—*Aythya nyroca, Güld.*

The White-eyed or Ferruginous Duck breeds, I believe, in some localities in the plains of India, and in Sindh, where it swarms during the cold-weather, I was informed that it remains during the whole year. I have never, however, succeeded in finding a nest, or obtaining any reliable information as to one being found in the plains.

In the lakes in Cashmere they breed most abundantly, so abundantly that boat-loads of their eggs are brought into the Sirinugger market during the season.

They lay in June, and, according to my native collector who examined a vast number of their nests, build a moderate-sized nest of dry rush and sedge in amongst rushes, reeds, and water-weeds, sometimes on the ground and sometimes more or less floating and supported on masses of water-plants. The interior of the nest is composed of rather finer materials, and the eggs are generally more or less intermixed with feathers and down.

Ten was the largest number of eggs found in any nest.

The eggs of this species are at once distinguished from those of any other Duck laying within our limits with which I am acquainted, by their well-marked, though delicate, *café au lait* tint, which however has often a faint greenish tinge. In shape they are commonly very regular and perfect ovals, moderately broad as a rule, but occasionally considerably elongated and slightly compressed towards the large end. The shell is very smooth and fine, but it has very little gloss.

In length the eggs vary from 1·9 to 2·15 in length, and from 1·4 to 1·54 in breadth; but the average of sixty eggs is 2·02 by 1·47.

974.—*Podiceps cristatus, Lin.*

The Crested Grebe is a cold-weather visitant to the whole of Continental India, but, except along the Sindh Coast and in the sub-Himalayan districts, it is nowhere, so far as I know, at all common.

Personally I know nothing of its nidification, but it breeds, I understand, commonly in the lakes of Cashmere, and Mr. W. Theobald makes the following remarks on the subject:—

"Lays in the second week of May. Eggs, five in number, ovato-pyriform. Size, 2·53 by 1·51. Color, pure white; when recently laid, pale green. Wuller Lake. Nest, a heap of weeds floating on the surface of the water, but connected to reeds, &c."

975.—*Podiceps minor*, *Lin.*

Although Mr. Gray retains *P. philippensis*, Bonn., from India and Ceylon as distinct, I am quite convinced, having carefully compared a large series of our Indian birds from all parts of the empire with a number of English and European specimens, the Little Grebe of India is identical with our English Dab Chick.

The Little Grebe is to be found all over the empire, and there is scarcely any considerable-sized pond, tank, or lake in which it may not be seen during the cold-weather, but during the breeding weather it leaves those which afford it no cover in the shape of rushes, reeds, and aquatic vegetation.

With us this species breeds at very different seasons, according to locality. In Cashmere they lay about the middle of May. Throughout the Upper Punjab and the Doab they chiefly lay in August and September. In Jhansi July seems the favorite month; in the Nilghiris, May and June; and in the Shevaroys, August. The nests are sometimes fixed to the branches of some water-overhanging tree a couple of feet above the water, and are then made of twigs, grass, leaves, and weeds; but generally they are mere masses of weeds and rush, founded on some tuft of water-grass, and little,—if at all,—above the water level. It is almost impossible to catch the old bird on the nest, and almost as difficult to surprise her so far as to make her leave the eggs uncovered. Almost invariably they are concealed by a layer of fresh wet weed. I doubt whether the birds sit much during the day, as I have watched a pair that had a nest, containing five (as it turned out) much-incubated eggs, nearly a whole day, and found that they never left the comparatively open water in which they were feeding, for the dense rush in which we found the nest next morning, for more than five minutes at a time. The birds certainly did not see me as I was completely hidden and watching them through a pair of binoculars. I suspect that during the day the combined heat of the sun and the fermentation of the weeds is sufficient for incubation, and I have observed that some of the eggs (I presume those first laid) are always much more forward than others. Dr. Jerdon says they lay from five to eight eggs; but I have never seen or heard of any nest containing more than six eggs, and the number is almost invariably five.

Mr. Brooks writes: "Got a nest, containing four eggs, of this bird near Etawah in a jheel on 9th September 1867. The nest was a mass of weed and rush on a tuft of water grass. The eggs, slightly glossy. Shell, firm and hard. Shape, an oval, somewhat pointed at both ends, though more so at one than the other. They were a mottled, stippled, dirty yellowish brown all over, the small end of one of the eggs a darker brown. They must of course have been white when first laid, and have become the color they are (which is much like that of some addled Vulture's egg) from lying in the midst of wet decaying vegetable matter."

Mr. W. Theobald makes the following remarks on the nidification of this species in the Valley of Cashmere:—

"Lays in the second week of May. Eggs, five in number. Shape, pointed oval. Size, 1·4 by 1·0. Color, pure white. Wuller Lake. Nest, similar to that of *Podiceps cristatus*."

He further tells us that in the neighbourhood of Pind Dadan Khan and Katas in the Salt Range they "lay in August and September. Eggs, five. Shape, pointed oval to long ovato-pyriform, measuring from 1·42 to 1·5 in length and 1·0 to 1·04 in breadth. Color, pure white; when recently laid, green; is soon soiled brown in the nest. Nest, a few weeds heaped on the rank vegetation of jheels but floating, and usually several nests together."

Mr. Davison says: "The Little Grebe breeds on the Ootacamund Lake in May and the earlier part of June in large numbers. The nest is either placed in the centre of a small clump of rushes, or attached to the outside: in either case it rests upon the water. When fresh, the eggs are pure white, but by the time they are ready to hatch off they are very dark, sometimes nearly black. This is owing to the habit the bird has of covering the eggs with wet leaves and rubbish every time it leaves the nest. It is amusing to watch the bird, as it sees a boat approaching, covering the eggs, and it is often not until the boat is only a few yards off that it plunges off the nest. The young appear to take to the water as soon as they are hatched, and often a little party of four or five may be come across (deserted by both parents), roving about hither and thither as if they did not know where to go or what to do, keeping up all the time a low monotonous chirrup. At this young age they appear to be incapable of diving; at least I have never seen them exercise this power. The normal number of eggs appears to be five."

Mr. A. G. R. Theobald remarks: "I found a nest of this species on the 19th August at a lake opposite the Ahtoor station of the Shevaroy Hills. The nest was a large irregular platform, some 10 inches wide and nearly 2 feet long, fixed to the branches of a bushy tree growing at the water's edge. When I found it, the nest was nearly two feet above the water level, but when constructed, it may have been much nearer, as the lake had been recently a good deal higher. The nest was composed of grass, leaves, weed, and thin twigs, and contained five much-incubated eggs, which, when I found them, were completely covered with grass and leaves."

The eggs are moderately elongated ovals, much pointed at both ends, though rather more so at one end than the other. The texture is fairly close but slightly chalky, and they rarely have much gloss. When first laid, they are white, faintly tinged with blue or green. In England the eggs are said to be pure white, but all those that I have seen in India have always, if quite fresh, exhibited a faint bluish green tinge. Owing to the bird's habit of covering the eggs over with wet water-weeds, whenever it leaves them for a time, they become rapidly discolored, turning green, dingy yellowish brown, and then dark earthy brown, like a hard-set Shell-eater's egg.

In length they vary from 1·28 to 1·52, and in breadth from 0·77 to 1·1; but the average of forty eggs measured was 1·39 by 0·99.

980.—*Larus brunneicephalus, Jerd.*

The nest of the Indian Brown-headed Gull has never yet, I believe, been taken, but the first Yarkand Mission found the birds very abundant in July, at an elevation of about 15,000 feet, in a small stream running down from Chagra into the Pangong Lake, and there is good reason to believe (all the birds seen were in full breeding plumage) that they had nests in the immediate neighbourhood. The lake itself is very salt and very bare, and doubtless it was somewhere just at the mouth of the Chagra stream, which is fresh, that these gulls were breeding.

983.—*Sterna nilotica, Hasselq.*

The Gull-billed Tern is common enough all over India in the cold-weather, but very few indeed remain to breed with us, and these only in the far North-West. In Cashmere I have little doubt that they do breed, but no one has yet ascertained the fact. I have never found this species breeding in the North-West Provinces; indeed, it seems to leave these latter for more northern districts as soon as the hot-weather sets in. That occasional stragglers at any rate breed in the North-West Punjab I have certain proof. On the 28th April 1870, when searching a sand-bank in the Chenab a little below the bridge of boats between Wuzeerabad and Guzerat, I found a pair of the Gull-billed Terns breeding. They were by themselves. About fifty yards distant in one direction was a colony of *Glareola lactea*, and about seventy yards in another were a group of nests of *Rhynchops albicollis*. On the same sand-bank I found the eggs of *Seena aurantia, Sternula minuta* and *javanica*, and *Esacus recurvirostris*. The pair of this present species were very tame, and allowed me to approach within ten yards before rising. When I walked up to the spot, I found a single egg in a considerable depression of a tiny sand mound, which was crowned by a dwarf bush of Jhao (*Tamarix dioica*); I did not touch the egg, (on either side and within a few inches of which the birds had been sitting), but retreated some twenty paces, on which both Terns immediately resumed their former position. As I moved, they again rose, and I shot the female (as it proved) as she was flying away.

The egg, which I secured, was perfectly fresh, whereas the eggs of all the other species were more or less hard-set. It was a rather elongated very perfect oval, measuring 1·78 in length by 1·28 in breadth, a typical Tern's egg in coloring, with a delicate greenish stone-colored ground when fresh, now faded to a creamy drab, with numerous streaks, spots, and blotches of deep brown and brownish yellow, and more or less faint clouds of pale inky purple appearing to underlie the surface of the egg, which was almost entirely devoid of gloss.

There is to my mind no possible doubt of the authenticity of the egg, but it is nevertheless smaller than those that I have seen from Europe, and than the specimen figured by Mr. Hewitson. The coloration too, although of precisely the same type, is by no means so bright as he represents it. The egg closely resembles some of those of *S. seena*, and though slightly *longer* than the longest egg of that species that I have ever seen (and I have seen some hundreds), it is still not quite so *broad* as one or two of those that I possess; and so, until somebody else finds a second nest, I cannot quarrel with any one who thinks I made some mistake; but I did not though, all the same.

984.—*Hydrochelidon indica, Steph.*

The Whiskered Tern breeds not uncommonly in the North-West Provinces, Oudh, and parts of the Punjab in large lakes and broads. I have not yet heard of its breeding in Central or Southern India.

They lay in July and August. As a rule, their nests are placed towards the centre of some large jheel, where the water is deepest and no rice or rush grows, but where the surface is paved with the broad leaves of the water-lily and the lotus. On these they construct a slight platform of rush and weed, wound round and round in a circular form. Four seems to be the full complement of eggs.

Dr Jerdon is mistaken in his statement that Mr. Brooks found this species breeding in large churrs on the Ganges. Mr. Brooks disclaims having ever said anything of the kind; the only species of true Terns that do thus breed are *S. seena, S. javanica,* and *S. minuta.* Far in the north-west, in the rivers of the Punjab, a few pairs of *S. anglica* remain to breed, and on the 28th April 1870, as already noticed, I took an egg of this species on a sandbank of the Chenab two miles below Wuzeerabad. *H. indica* is essentially a marsh Tern, which with us *S. anglica* is not. The former lays in July and August.

I hardly think that even a tithe of the Whiskered Terns that visit us during the cold-season remain to breed, the great majority, I believe, leave the plains and breed either in the hills, as in the Cashmere lakes, or else go further north. I only know of three or four places where they breed in the plains,—I mean that I have myself seen,—and these were in the Etawah, Mynpooree, and Meerut Districts. Messrs. Brooks and Anderson have each, I believe, found two or three of their breeding haunts, but no others of my correspondents appear ever to have obtained the eggs, and when we remember how very plentiful this Tern is in many localities during the winter, the conclusion that the great mass leave us to breed elsewhere is irresistible.

This Tern (*H. leucopareia,* Natt., of most European writers) is very common during the summer in Cashmere. The birds were breeding when the first Yarkand Mission passed in June, and many nests were taken in a marsh close to Sirinugger, about a mile from the "Visitors Reach" and on the opposite side of the river. The nests were made of green rushes, placed in amongst rushes, reed, and floating weeds, and were very scanty. A year or two later Mr. Brooks and Captain Cock took numbers of their nests on the Wuller Lake early in June, and Dr. Stoliczka found them laying a second time there on the 26th July. All the three breeding places I have seen were precisely alike. I quote an old note recorded at the time about one of them:—

"*August 14th, Achulda Jheel, Zillah Etawah.*—In the centre of the jheel, where the water was deepest and no rice or rush grew, but where the lake was paved with lotus and lily leaves, a small colony of these birds had established itself. On the broad leaves of the lotus they had built loose slight nests of rice and rush stems, and in these we found their eggs. Only two nests contained three eggs each, the others two and one. All the eggs were perfectly fresh. The birds had obviously only just begun to lay. There were not less than twelve or more than twenty couples. We shot one, a female, which we preserved. Whilst the nests were being robbed, the birds whirled round and round the men's heads, continually emitting their hoarse screaming cry."

Mr. A. A. Anderson tells us that when at Fyzabad (Oudh) in 1867, he one day early in July came across a vast assemblage of these Terns, flying about a swamp about a mile in circumference, distant only about two miles from the town and within a stone's throw of the main road and of a village that overlooked the water. The swamp was one mass of tangled weeds and aquatic creepers, and watching the birds he soon discovered that they were constructing on these floating nests, bringing for the purpose long wire-like weeds, some of them two feet in length, from different parts of the swamp. He goes on to say:—

"On the 7th July we again visited the place, taking a small canoe with us, which was pushed through the rushes and weeds with the greatest difficulty, and we were soon rewarded with as many eggs as we could carry home.

"Each nest contained one, two, or three eggs, though possibly four may be the proper number had we allowed the birds sufficient time to lay the full complement.

"The circumference of some of the nests I measured ranged between 3½ and 4 feet, and they were about 4 inches thick. They were composed entirely of aquatic plants, and so interwoven with the growing creepers that it was impossible to remove them without cutting at the foundation of the structure."

In India, so far as we yet know, they always make their own nests, generally, as already mentioned, on the surface of floating leaves, but sometimes on tufts of water grass. It may however be well to note that in Northern Africa Mr. Tristram found a whole colony of them breeding in the deserted nests of the Eared Grebes, and possibly in some parts of India they may similarly appropriate the old nests of other species.

The eggs of this species are moderately broad ovals, a good deal pointed towards one end. The texture is very fine and close, but they have little or no gloss.

The ground color varies, and is sometimes a pale olive stone color, sometimes an olive brown, sometimes a bright decided green, or a rich or pale blue green, sometimes a greenish grey, but most commonly a pale clear olive green. The markings, which are generally pretty numerous, consist of streaks, spots, and blotches of deep blackish brown, umber brown, or reddish brown, and of a number of very pale purplish brown clouds, streaks, and spots underlying the primary markings. Sometimes the markings are all very small and niggling, sometimes they are large and bold. In a considerable number of eggs the majority of the markings are towards the large end, and not a few exhibit there a bold blotchy irregular zone. I have one egg taken by Mr. Brooks in Cashmere that, so far as color and markings go, exactly corresponds with Hewitson's third figure (3rd edition) of the Common Guilemot's egg. Some of the eggs have a very Snipe-like character, with large oblique blotches; some have only very small specks or spots, while others remind one much of many types of Plovers' eggs.

In length they vary from 1·39 to 1·65, and in breadth from 1·02 to 1·15; but the average of forty-eight eggs is 1·51 by 1·09.

985.—*Sterna seena*, *Sykes*.

Sykes's Tern, or, as Jerdon calls it, the Large River Tern, breeds throughout the empire on sand-banks in, or on the sandy banks of, our larger rivers. I am not aware that it ever breeds in lakes or swamps, or in the Hills either of Southern or Northern India. I do not know at what season it lays in Southern India, but in the Ganges and Jumna and their various affluents, the Brahmapootra and the Irrawaddy, the majority seem to breed in March, while in the Indus and its affluents they scarcely begin to lay till the second week of April.

The only nest they make is a small depression in the bare sand.

As a rule, several pairs breed within hail of each other; and generally where you find the eggs of this species, there you will find not far off those of the Lesser Indian Swallow Plover (*G. lactea*), of the Indian Skimmer, of the Black-bellied Tern, and the Great Indian Stone Plover. Three is the full complement of eggs. At the season at which all these Terns lay, the bare white glittering sands on which their eggs are deposited are often at noon-tide too hot to touch; and accordingly during the day-time the birds seem to trust to the heat of the sun to hatch the eggs, and are rarely to be found on their nests; they pass the time wheeling round and round above, or snoozing beside them. By night-fall every egg is covered by one or other of the parent birds, and when it is dark they sit so close that it is easy to catch them with a common butterfly net.

I reproduce a couple of old notes on the nidification of this species:—

"We procured numbers of eggs of this species on the 12th and 13th March in shallow circular depressions in low sand-bank islands of the Jumna near Sheregurh. Three was the greatest number that we found in any nest. The birds did not appear to have long commenced laying, as all the eggs were fresh. It is not amongst rocks or rocky reefs, where so many of the great Stone Plovers and Lapwings are nesting that we found its eggs, but on bare low spots of sand from two to three feet above the present river level. On one occasion we found a solitary nest, but usually several pretty near together. On one bank, within a compass of a hundred yards, we found these, *Rhynchops albicollis*, the Black-bellied Tern, and Lesser Swallow Plover, all breeding, each species however keeping pretty much to its own locality. The vigorous manner in which these River Terns attack and chase away Crows, Kites, and similar would-be-robbers from the immediate neighbourhood of their nests is very noticeable. To me they seemed to show more solicitude for their eggs than any of the other species breeding near them. It is impossible to doubt when they have eggs anywhere near; the way they flash backwards and forwards and wheel round and round overhead, incessantly repeating their shrill plaintive cry, at once reveals the existence of the treasures they are so anxious to preserve; but for this the search for their eggs would be weary work, as it is only when quite close to them that they catch the quickest eye, and I have myself seen ordinarily observant persons (not of course specially on the look-out for, or thinking of, eggs) walk right across a bank on which there were some fifty nests of this and kindred species, almost stepping on some, without ever noticing a single egg. The color of the eggs varies a good deal. Some have a pale green ground, in others this is stone color, in others *café au lait* color, and there are all kinds of intermediate shades.

"The markings are of moderate size and rarely thickly-set, though sometimes there is a tendency to form a zone near the larger end. They are brown, not dark, but varying in shade and tint according to the ground color, or possibly by contrast with it. There are also the usual secondary faint purplish brown blotches and markings, as if looking beneath the surface of the shell. Unlike the Stone Plovers and the Lapwings, the eggs of the same nest are not even commonly of the same shade of ground and character of markings. Out of three eggs, two will be a pale warm brown and the third pale green, contrasting, as they lie side by side, so strongly that at first it seems difficult to believe that they belong to the same bird. Although even in shape they vary a good deal, still their general character is that of a round oval, rounder than those of *Rhynchops albicollis* for instance. In this species I have remarked that the shortest eggs are the broadest, and *vice versâ*, so that the cubic contents differ less than might be expected. The egg is somewhat glossy, more so than that of *S. javanica*.

"*April 6th.*—Revisited all these sand-banks, but found very few eggs: the great majority had clearly hatched off, and those we did find probably belonged to birds that we had robbed, since we found none on those banks where, having quite as many eggs as we wanted, we did not meddle with the nests we saw.

"I found many nests, each containing three hard-set eggs, of this species on a series of sand-banks in the Chenab, near Wuzeerabad on the 28th April. On the 9th April I had taken several fresh eggs (in no case more than two in any one depression) on sand-banks on the Jhelum, between the station of that name and Pind Dadan Khan. As a rule, one does not find numerous pairs of this species breeding on the *same* sand-bank, and though they always lay on banks occupied by other species also, they almost always keep a good many yards apart from each other and other species."

Writing from Tipperah, the late Mr. Valentine Irwin remarked: "The large River Tern (*S. aurantia*) lays during March with us. The eggs I sent you were obtained on the 15th of March on sand-banks in the Megna, about twenty miles below the Dacca Road."

From Pegu, Mr. Eugene Oates writes that this species is "abundant throughout the whole length of the Irrawaddy, where it lays on the numerous sand-banks in the middle of March. In the extensive plains round Pegu, it is common in all the tidal creeks. In these localities, I think, it nests in paddy fields and waste-ground covered with short grass." This latter belief, however, I do not share.

Typically the eggs of this species are broad ovals, scarcely pointed at either end, of much the same size as the eggs of the Common Tern *(S. fluviatilis)* or the Little Gull (*L. minutus*). The eggs have little or no gloss, though the shell is very smooth and fine. In ground color, extent, and character of markings they vary excessively, and yet there is a certain family resemblance amongst all the eggs of this species, which prevent their being confounded with those of any of our other Indian Terns with which I am acquainted. The ground color is sometimes a delicate greenish grey, sometimes pale greenish-stone color: most commonly perhaps a sort of buffy stone, occasionally, when fresh, slightly tinged with pink, and sometimes suffused with olivaceous. The markings too vary much in shape, size, and character. Typically they have small blotches, lines, and streaks pretty thickly sprinkled over the whole surface of the egg, at times quite hieroglyphic-like; but in some specimens the blotches are large and few in number, and occasionally they consist of long streaks, reminding one of the characteristic markings of *Rhynchops albicollis*. Whether large or small, streaks, lines, spots, or blotches, as the case may be, besides these primary markings, which are deep brown of one shade or another, there are secondary markings underlying these, clouds and streaks of pale inky purple, which convey an idea of being beneath the surface of the egg.

In length the eggs vary from 1·5 to 1·75, and in breadth from 1·17 to 1·32; but the average of sixty eggs is 1·65 by 1·25.

987.—*Sterna javanica, Horsf.*

The Black-bellied Tern, like Sykes's, breeds all over the empire in the same situations as that bird, and usually more or less in company with it. March is the breeding season in the North-West Provinces, April in the Punjab, and apparently in Southern India they lay in both months.

Their nests are mere depressions in the sand of sand-banks in the beds of rivers, and surrounded by water; and while the usual number of eggs is three, I have repeatedly found four eggs in the nests of *this* species.

I have a couple of notes in regard to the Black-bellied Tern:—

"We took many of the eggs of this species near Sheregurh on the Jumna on March 12th and 13th, 1867. They were in every case breeding in company in low, bare, water-surrounded sand-banks. No nest that we found contained more than three eggs, but on many nests (mere shallow circular depressions in the dry sand) the birds were sitting, and many of the eggs were ready to hatch off. They seem to lay earlier than the River Tern *(S. seena)*, which again I take to be somewhat earlier than the Skimmer. The birds I fancied were bolder than *seena*, as when, after looking at their eggs without touching them, we retreated thirty or forty yards, the sitting birds at once resumed their positions on or beside the eggs. On the same banks we found parties of the Skimmer, *S. seena*, and the Lesser Swallow Plover breeding, each party keeping pretty well to its own quarters. The eggs are generally dull and glossless. Of quite fresh eggs the ground color is a greenish-stone color, but as incubation proceeds they assume more of a *café au lait* hue. The markings are generally feeble, a more or less warm brown and a dull faint purplish brown, rather sparsely distributed in spots, specks, and tiny blotches. Some eggs almost entirely want the dark brown, and these have a very dull dead appearance indeed. In shape they are a round oval, and do not vary very much.

"By April 6th these had almost all hatched off. There were a few eggs, second layings, at places where we had robbed the nests."

"I found quite fresh eggs of this species on sand-banks in the Jhelum, near Pind Dadan Khan, on the 9th April, and hard-set ones (*four* in some nests) on a bank in the Chenab, near Wuzeerabad, on the 28th April 1870. Like *S. seena* and unlike *Rhynchops albicollis*, this species rarely breeds together in considerable companies. Two or three pairs are the most that are usually found on one bank, and even these two or three commonly keep pretty well apart."

Captain Burgess, speaking of his experiences in the Dekhan, remarks: "While walking on a sand-bank in the midst of the River Bheema, I was beset by a pair of these Terns, and on looking about on the ground found two eggs deposited in a slight hollow scraped in the moist sand not far from the edge of the water. These birds, when flying over head, utter a cry very like the chirp of a Sparrow. They breed during the months of March and April, laying two eggs of a rich stone color, spotted chiefly round the centre, and more sparingly over the larger end, with grey and light brown spots, and measure an inch and rather more than two-tenths in length by an inch in width."

Mr. Oates tells us that it breeds commonly on all the sand-banks of the Irrawaddy. Eggs, three in number, deposited on the bare sand. Lays in the middle of March."

In shape the eggs are moderately broad ovals, distinctly pointed towards one end. As a body, they are considerably more elongated than those of *S. seena*, and in size seem rather smaller than European specimens of the eggs of *S. minuta*, as figured by Mr. Hewitson.

In color the eggs run through various shades of creamy, buffy, and *café au lait* grounds (occasionally, when quite fresh, with a faint greenish, or again pinky tinge), but vary far less than those of *S. seena*. The markings consist usually of small specks, streaks, and spots, not very thickly set, and occasionally of a few large blotches, all these of reddish or purplish brown; and besides these of numerous faint hazy spots, clouds, and streaks of pale purple, which underlie the first-mentioned markings and seem to be more or less beneath the surface. The eggs are almost perfectly glossless, far more so than those of *S. seena*, In length the eggs vary from 1·18 to 1·5, and in breadth from 0·95 to 1·02. I have had at one time or another at least a hundred of these eggs, but I seem to have only eleven by me now, and the average of these is 1·3 by 0·99.

988.—*Sternula minuta, Lin.*

The Ternlet seems to be pretty generally distributed throughout all the larger rivers of the empire. According to my experience it rarely extends quite to the sea-coast, or fishes in pure sea-water. In the cold-season it is more plentiful about the estuaries and the lower portions of river-courses, but for breeding purposes it goes higher up inland.

In India this species breeds from the middle of March to the beginning of May, according to locality, those in the south beginning earlier and those in the north later; but whether they are early or late they always lay later than the other species, *Sterna seena* and *javanica, Rhynchops albicollis* and *Glareola lactea,* all of which commonly breed on identically the same sand-banks. It is almost needless to say that the eggs, four in number, are laid in a slight depression in the bare sand on some entirely water-surrounded bank in a considerable-sized river. Personally I have taken but few eggs, comparatively speaking, of this Ternlet. Such few notes as I have recorded I quote:—

"*Etawah, March* 12th.—I have scarcely ever noticed this bird here in the cold-weather, but to-day I have seen a good many near Sheregurh in the Jumna, and though as yet we have found no eggs, it is doubtless for breeding purposes that they have come up here.

"Numerous eggs received from Mirzapoor on the Ganges, where it breeds like the other Terns on sand-banks. The eggs taken on the last day of March were mostly fresh. Those before me are rather long and pointed. The ground color, amount and intensity of markings, as well as the shape of the eggs, vary much: one is a buffy stone color, with well-marked dark reddish brown specks and spots and tiny blotches, and a number of dimly-seen very pale purplish grey secondary markings: another egg is a pale cold grey stone color, with numerous, feeble, faint, purplish blotches and spots dimly seen as if below the surface, and just a few brown specks: another is very similar to this latter, but with far more of the dark primary markings, which are a purplish brown."

"Between April 4th and 8th I secured a number of these eggs on sand-banks of the Jumna and Chumbul, specially near Bhurrey, all or nearly all fresh. They are, therefore, decidedly later breeders than the other Terns. These eggs vary much in ground color; in some this is pale olive brown, in some pale reddish brown or *café au lait* color; in some it is very pale green, in others almost pinkish. The general character of the markings are spots, small blotches, and a few specks of a rich dark brown (which in some is blacker, in some more purple, and in some redder), with blotches and spots of a sort of sub-surface looking faint purple or lilac. None of the eggs seem to have *any* gloss, whereas there is *often* a good deal and *always some* in the case of those of *S. seena* and *Rhynchops albicollis,* and *occasionally* a little where those of *S. javanica* are concerned. In some the markings are thickly, in some sparsely, sown over the whole surface. In some they form a sort of zone near the larger end, while elsewhere there are few. In some too, in fact generally, the spots and blotches are roundish, but at times they are long streaks similar to those so common on the Skimmer's eggs. They are proportionally more oval eggs as a rule (I mean longer and less broad) than those of *S. seena* and *S. javanica.*"

"I found three nearly fresh eggs of this species on a bank in the Chenab, near Wuzeerabad, on the 28th April. Excepting *S. nilotica,* of whose nidification here we know next to nothing, this species appears everywhere in India to lay later than the other species in company with which it breeds. This is perhaps the rarest of our common river Terns, and its eggs are far less easy to procure than those of the others."

In the case of this and other Terns I have quoted descriptions written with the fresh eggs before me, besides giving a full description taken from those in my collection; (1*st,*) because the eggs do vary so that no one description written at one time can quite adequately embrace *all* varieties; and (2*nd,*) because these eggs, more perhaps than any others, change color with keeping, even though all light be rigidly excluded.

Normally the eggs of this species are long ovals, distinctly pointed at one end. There is a regular gradation in size and shape in the eggs of *S. seena, javanica,* and *minuta.* The first are much the largest and roundest, the next are smaller and more oval, the last are smaller still and most elongated of all. Whether our Indian Lesser Tern is really identical with that of Europe (and this has been doubted) or not, it is certain that not one single egg of a large series that I have seen equalled in size the specimen of the European birds' eggs figured by Mr. Hewitson, while the vast majority were considerably smaller. His figure too by no means gives a good idea of our eggs. The ground color with us varies much, but the two commonest shades are a very pale drab color (with, when fresh, a faint greenish tinge) and a warm *café au lait* color. All kinds of intermediate shades,—creamy, buffy, and greyish-stone colors,—occur, but the commonest are those first described. The markings, as usual in these Terns, consist of streaks, blotches, and spots of different shades of deep brown, with underlying clouds and spots of faint inky purple. As a rule, the markings in this species are, I think, bolder, larger, and more streaky than those of *javanica,* which are smaller and more niggling. The eggs, as a rule, are entirely destitute of gloss.

In length the eggs vary from 1·15 to 1·3, and in breadth from 0·88 to 0·98; but the average of fourteen eggs is 1·2 by 0·94. These fourteen are, however, the largest and smallest out of more than one hundred eggs, the rest of which, together with thousands of other duplicate eggs, were unfortunately destroyed.

989.—*Sterna Bergii, Licht.*
990.— „ *bengalensis, Less.*
990 *bis.*— „ *cantiaca, Gmel.*

I know nothing positive in regard to the nidification of these three species, but I mention them here to draw attention to the fact that all three are said, by the fishermen of the Mekran Coast, to breed in June on the rocky island of Astolah, which lies in the Gulf of Oman off the Mekran Coast a short distance beyond the Sindh boundary. This much is certain: boat-loads of eggs are taken at this place yearly, and the fishermen declare that they belong to these three species, to *Phaeton ætherius*, and *Sula fiber*. It is to be hoped that some of the residents of Kurrachee will take the trouble of visiting this spot and ascertaining the facts.

991.—*Sternula melanauchen, Tem.*

The Black-naped Ternlet breeds within our limits only, so far as is yet known, on the Andaman and Nicobar Islands.

For a magnificent series of its eggs, and for such information as I possess in regard to its nidification, I am indebted to Captain Wimberley.

It lays, according to the monsoon, earlier in some years, later in others, between the middle of May and the first week in August. Little rocky islets, a little detached from the main island and but for a little scrub entirely bare, seem to be usually chosen for nesting-places, if indeed this term may be used for a bird that lays its eggs either upon a little collection of small lumps of coral and stone on the bare rock, or in a little depression in the sand.

Two seems to be the full complement of eggs. The eggs vary very much in shape. Some are very perfect broad ovals, scarcely perceptibly-pointed at one end, and others are decidedly elongated ovals, almost Plover-like in the way they are pinched out towards the small end; but the majority are intermediate between these two forms. The shells, though smooth and satiny in their texture, exhibit but little gloss. The ground color varies from creamy yellow or very pale buff to pinkish or greenish stone color, and is more or less sparingly, but usually boldly, blotched and spotted with a more or less sienna brown, which in some spots is almost black. Besides these primary markings, as in all Terns' eggs, numerous clouds, spots, and blotches, in some eggs small, in some large and conspicuous, of pale purple or dusky lilac are scattered here and there about the egg, looking in some cases as if they were below its surface. In some spots the brown is excessively red, and in others a reddish halo surrounds part of the spot as if the color had run.

In a good many eggs there is a marked zone generally round the large, rarely round the small, end. In some all the markings are very feeble and washed-out, in others they are very bright and strongly defined. In some again they are small and comparatively numerous, while in one or two eggs they consist solely of three or four enormous blackish brown, and inky purple clouds. The eggs out of each nest are very similar, and can be picked out at once out of a large number; but the eggs of different nests differ to a remarkable degree, and yet possess a certain family likeness which would, I think, prevent their being mistaken for the eggs of any other of the Terns that breed with us. The eggs vary in length from 1·41 to 1·65, and in breadth from 1·06 to 1·2; but the average of thirty-six eggs is 1·56 by 1·12.

995.—*Rynchops*[*] *albicollis, Swains.*

The Indian Skimmer or Scissor-bill breeds throughout the empire on bare sand-bank islands in the larger rivers.

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[*] This is how the name was originally written by Linné in 1758.

In the Ganges and its affluents the majority seem to lay in March, in the Indus and its tributaries in April.

It makes no nest, only scrapes a small hollow in the bare sand from a foot to three feet above the water level, and there it lays its eggs, the full complement of which is four. I have nothing to add beyond what will be found in the two old notes that I reproduce :—

"These birds were breeding on the 12th and 13th March on low, bare, water-surrounded sand-banks in the Jumna, near Sheregurh. In one nest we found three eggs, and on this the old bird was sitting, but in every other case, (and we found something like twenty eggs,) only one had as yet been laid. The eggs are laid in a circular depression, which may be 1½ inch deep and 4 inches broad, in the bare, dry, white sand. In all cases several pairs were breeding close to each other, and generally the Large River and Black-bellied Terns were also breeding somewhere near. Judging from the eggs, this bird lays a little later than either of these species. Whilst we were robbing their nests, they flew about in the neighbourhood uneasily, pretty often uttering shrill cries, but not on the whole seeming so much put out by, or so ready to resent, our interference and intrusion as *S. seena*. Compared with those of these latter, their eggs are somewhat small. Compared with those of both *S. seena* and *javanica*, their eggs are long and narrow. They vary somewhat in ground color, this being in some greyer, some greener, and some more buffy. A faint, almost pinky, tinge is noticeable in some. Of course in this and other similar eggs (I am writing with the fresh unblown ones before me) when blown and old all the delicate shades fade and the eggs lose half their beauty. The character of the markings on all are very similar,—pretty large bold chocolate brown blotches, with a few smaller spots of the same color and a few faint purplish blotches and secondary markings of a *quasi* sub-surface character. In some the blotches are numerous, but they are never very thickly set, and I have specimens with so few of them that on one side at least the egg is nearly unicolorous.

"By 6th to 8th April all seem to have hatched off, except second layings, where we had robbed the nests before.

"On the 28th April 1870 I took over one hundred eggs of this species off a sand-bank in the Chenab, near Wuzeerabad. On the 6th April not one egg was laid. On the 28th almost all the depressions (I cannot call them nests) contained four eggs; many were ready to hatch off, and there was not one quite fresh egg amongst the lot. As usual, the eggs, which pertained to some thirty-odd pairs, were all placed in the same immediate neighbourhood, a little apart from those of the other Terns and Swallow Plovers breeding on the same bank. The eggs were on perfectly bare sand. Other portions of the bank were thinly sprinkled with tiny Jhao bushes, but they had chosen a perfectly bare flat some fifty yards from the water's edge and some two feet above its level. Whilst we were robbing their eggs, they flapped lazily round about us, keeping however out of shot and keeping up all the while a ceaseless twittering cry. I may add that on the 9th April I took a few quite fresh eggs of this species, (which had obviously only just commenced to lay,) on sand-banks in the River Jhelum between the station of that name and Pind Dadan Khan."

The eggs of this species vary but little in size and shape. They are moderately broad ovals, more or less pointed towards one end, some having a very decided point, almost like a Grebe's egg. The texture of the shell is fine and compact, and they have a slight gloss. The ground color varies much, but the markings are very characteristic and uniform in their character. These eggs fade much, as indeed do most of those of this family; but when fresh the ground color exhibits a variety of delicate and beautiful tints,—pale pinky buff, cream, or stone color. Delicate greenish or greyish white, pale *café au lait,* and pale salmon color are amongst the most common. The markings consist of bold blotches and streaks, chiefly the latter, of rich umber-, chocolate-, or reddish-brown, occasionally so intense as to be almost black, underlaid by similar streaks and blotches of more or less pale inky purple. In the majority of the eggs the markings, as a whole, have a remarkably streaky character, the streaks running not parallel, but at an angle of about 30° to the major axis, seeming to be, as it were, twisted round the egg. The markings appear always to turn in the same direction, and holding the egg with the broad end uppermost and calling that the north, they have a set, if I may so describe it, from N. N. E. to S. S. W.

In length the eggs vary from 1·45 to 1·76, and in breadth from 1·08 to 1·28; but the average of one hundred and eight is 1·6 nearly, by 1·18. I notice that the Punjab eggs are longer than those of the North-West Provinces. Forty-three of the latter average only 1·55 by 1·18, while sixty-five of the former average 1·63 nearly, by 1·18.

1004.—*Pelecanus philippensis, Gmel.*

The Grey Pelican of India is, with all deference to Schlegel, Gray, Elliot, and Finsch, quite distinct, in my opinion, from *P. rufescens*, Gmel.

I have compared six African with more than thirty Indian specimens.

The plumage of the head and neck has an entirely different character in the two species. The irregular curly *mane* (for it is scarcely a crest) of *philippensis* is replaced in the adult *rufescens* by a full crest, nearly 4 inches in length, of straight narrow feathers, the webs of which are a good deal disunited. The rest of the feathers of the head and neck are in *rufescens* regular and close-setting, as compared with those of *philippensis.* The upper mandible of *rufescens* in all six specimens wants the double row of impressed spots present in every specimen, of both sexes, of all ages, and killed in all seasons of *philippensis*; it is also decidedly less compressed towards the base than that of *philippensis.*

Where and when the Grey Pelicans of which we meet with such countless multitudes in the plains of India breed has always been a mystery to me. Long before I cared about collecting eggs I was anxious to know where these Pelicans bred, but I have never succeeded in finding or in hearing on reliable authority of one of their breeding places.

Dr. Jerdon says: "The Grey Pelican is the most abundant species found in India, occurring in all districts where rivers and tanks abound, and breeding in the country. I have visited one pelicanry in the Carnatic, where the Pelicans have (for ages I was told) built their rude nests on rather low trees in the midst of a village, and seemed to care little for the close and constant proximity of human beings. I have also heard of many other breeding places in different parts of the country."

But when I questioned him he could not remember where the pelicanry he visited was, and all he could tell me was that there were no birds there when he saw the place, only numerous great nests on trees which he was assured belonged to Pelicans. At his advice I wrote to Dr. Shortt at Madras, who replied that he knew of a pelicanry; and later he very kindly visited it, but here too found only deserted nests, and was told by the villagers that, owing to the bursting of a bund, no Pelicans had ever bred there for years.

Now, what I want to find is some one who knows where Pelicans breed on the continent of India at this present day, and who will take the trouble to go and get the eggs and give me a note as to the breeding season, &c. At present these wretched Pelicans are quite a bugbear to me.

I ought to add that I have been told by a dozen people: "Oh! my dear fellow! lots of Pelicans breed here, or breed there,—in Oudh, Orissa, Tipperah, &c.;" and I have, after getting exact particulars, either visited the place myself, or sent reliable men with the promise of, to them, enormous rewards, if they succeeded in finding a breeding haunt; but in no case did I obtain the smallest trace of one, or the faintest shadow of a ground for believing that there ever had been one in the neighbourhood. For my part, bearing in mind the habits of other allied species, I should have expected them to breed on huge Swan or Sarus-like nests in swamps, and not on trees, but that they do breed in trees is clear from the subjoined note of Mr. Legge's.

It may be useful to note that many people, especially those born and bred in the country, call the Pelican Ibis, a Pelican, while many others call Adjutants Pelicans, and the true Pelicans, Water-Pelicans. An old friend of mine, a planter and a great sportsman, persists to this day that this is the right nomenclature.

Mr. W. V. Legge, writing from Ceylon on the breeding of this Pelican, remarks: "It breeds in February and March, forming colonies in conjunction with other large Waders round lonely tanks in unfrequented parts of the island. Layard mentions a large breeding place at one immense tank in the Northern Province called Padawia, but I believe this is now dried up.

"I found this species breeding at Uduuilla Tank, near Tissa Maha Rama, in the south-east. The nests were large structures, made of good-sized sticks and lined with small twigs; they were placed on the topmost branches of a description of thorny tree growing in the water. The diameter of the fabric was about 2 feet 6 inches, large enough to contain two or three young, at an age when they exceeded a goose in size, with the mother standing up by them; in the same trees were nests of *Tantalus leucocephalus* and *Falcinellus igneus*, the eggs of which I did not procure, as the young were already fledged. The number of eggs in the Pelicans' nests was three; long ovals in shape, and of a smooth chalky texture, dirty white in color. They were terribly soiled as Pelicans' eggs always are. The two in my possession measure 3·0 and 3·09 respectively in length, and 2·19 and 2·15 in breadth."

1005.—*Graculus carbo, Lin.*

The Common Cormorant is abundant enough in all the larger rivers of Upper India, at any rate in those which run through at-all rocky beds. I have never succeeded in finding their nest or procuring their eggs, but I had some fragments of shells shown me once which, from texture, color, and size, did probably really belong, as they were said to do, to this species.

At all seasons of the year, except the height of the rains, of which I cannot speak, they are to be found in the Chumbul in that part of its course where it forms the southern boundary of the Etawah District. The local boatmen assured me that the Common Cormorant bred there in April and May on rocky islands or lengthened rocky promontories, generally in amongst the rocks but sometimes on trees, making a large nest of sticks. It was in the Chumbul that the shells already alluded to were brought to me. A boatman pointed out a ridge of rocks where, he said, he had seen a great number of 'jul-kowa's' breeding the previous year; and, in the course of poking about this, some half-a-dozen fragments of eggs were found in crevices which certainly looked very much as if they might have belonged to Cormorants, with whose eggs I have been familiar from childhood. I have also been assured that they breed about some rocks in the River Jumna in large numbers, at a place called Mhow-Buriaree some thirty miles above Allahabad.

1006.—*Graculus sinensis, Shaw.*

The Lesser Cormorant of India, which is probably Shaw's bird, is certainly very rare in Upper India. Dr. Jerdon says that it is perhaps more generally spread over the country than the Common Cormorant, but this is an entire mistake. I have never yet seen a live specimen, nor have I ever seen a skin from any part of the North-West Provinces north of the Jumna, from Oudh, the Punjab, Rajpootana, or Sindh. The only specimens I have received (except from Lower Bengal and the countries eastwards) were sent me from Jhansi by Mr. F. R. Blewitt, who found this species breeding in the environs of large lakes in that district during the latter half of August and the first half of September.

The nests were placed on low trees standing on flooded land, and what at other seasons were the banks of the lakes. The birds were breeding in companies, ten or a dozen nests in the same tree. The nests were moderately large stick structures—and contained some five, some four, and some a lesser number of eggs, of which he sent me a large supply.

The eggs, though unquestionably belonging to this family, strike me as large for this species. The majority of them are nearly, and some of them are quite, as large as those of the Snake Bird, and though the bird itself is by no means *very* much larger than our Little Cormorant, the eggs sent me as belonging to it are fully double the size of those of this latter. I cannot, therefore, help fearing that perhaps some mistake has been made. The Cormorant and the Snake Birds breed together, at times in the same trees, and the wrong birds may possibly have been shot when the eggs were taken. Further observations are necessary.

The eggs, supposed to be those of this species, are very long ovals, much pointed towards one end, exteriorly a bluish chalky white, but beneath this, where this outer, somewhat friable, covering is removed by accident (as often happens naturally) or design, the real shell is of a pale greenish blue.

The eggs vary in length from 1·98 to 2·25, and in breadth from 1·28 to 1·6; but the average of thirty-three eggs is 2·1 by 1·4.

1007.—*Graculus melanognathos, Brandt.*

The Little Cormorant breeds all over the empire, always, as far as my experience goes, on trees in the immediate vicinity of lakes, jheels, or ponds, and very commonly in trees standing well into the water.

In Upper India they lay during the latter half of August and the first week in September. They nest in companies of from five or six to fifty or more pairs. The nests are moderate-sized stick structures, very often old ones of a previous year repaired, and not unfrequently they take possession of those originally built by Crows and Paddy Birds. Very commonly they are found breeding in company on the same tree with the Snake Bird, and occasionally,—but rarely,—with some of the smaller Herons.

I have noticed that they seem to have a decided preference for nesting in Babool trees (*A. arabica*).

"In Ceylon," says Mr. Vincent Legge, "it breeds in February and March, on trees by the side of unfrequented tanks, and often in company with *Plotus melanogaster*. Numbers of nests are placed in one tree, and are not large for the bird, being constructed of small sticks, placed on horizontal branches towards their ends. The number of eggs laid at the colony of these birds, at Uduvilla Tank, was usually three; they were long and elliptical in shape, and of a greenish white over an inner surface of green, appearing when the egg was scratched. Axis, 1·81; diameter, 1·08. The young, numbers of which were hatched on the 25th of March, sat huddled together on the branches close to the nests. They had the skin of forehead and tip of lower mandible whitish, as was also the pouch. Iris, grey."

The eggs are of the true Cormorant type,—long oval eggs, more or less pointed towards one end, with an exterior chalky coating, which, white or bluish white when first laid, becomes, as incubation proceeds, yellowish or yellowish brown, and beneath this a firm, hard, greenish blue shell. As a rule, more or less of the chalky covering becomes detached in the nest, and it is not rare to find eggs which have naturally lost this coating from more than half their surface.

In length the eggs vary from 1·65 to 1·92, and in breadth from 1·08 to 1·25; but the average of forty-seven eggs is 1·76 by 1·16.

1008.—*Plotus melanogaster*, *Penn.*

The Indian Snake Bird, Darter or Ahinga, seems to breed generally throughout India, the season varying in different provinces according to the monsoon.

In Ceylon and the country south of Madras, where they get the north-eastern monsoon, they lay in January or February, while in Upper India, where we get the south-western monsoon, the majority breed in August, though a few lay as early as the end of June, and I have found several nests in July. They build moderate-sized stick nests on trees, three or four pairs building on the same tree, and not unfrequently twenty pairs in the same clump of trees. Like the Little Cormorant in whose company they so often nest, they seem to have a decided preference for thorny acacias, like the Babool, to build on.

They seem to occupy the same trees year after year, occasionally building a new nest, but as a rule only repairing the old ones.

I have seen many of their breeding haunts, and in every case but one they were small clumps of Babool trees, which at the nesting season stood well out into the water, in some cases half a mile, although in the dry season merely standing at the edge of some lake, swamp, or pond.

Three or four is, I think, the full complement. I have on several occasions found four in a nest, but never more.

Mr. W. V. Legge, writing from Ceylon, says of this species: "*Plotus melanogaster* is common on the inland tanks of the north and north-east as well as the south-east of Ceylon. The breeding months in the latter region are February and March, and most likely January and February in the north, as the rains are over earlier there than in the south. Three or four pairs may be found nesting at the same spot. They build a flat nest of sticks on the branches of thorny trees growing round the tanks and fresh-water swamps on the south-east coast, and lay from two to three eggs. In shape they resemble somewhat the eggs of *Podiceps*, being of less diameter for their length than those of the Little Cormorant (*G. melanognathos*). They are of an uniform faint greenish white over a green ground, which latter is perceptible when the egg is scratched. They vary a good deal in dimensions."

The eggs closely resemble,—though they are perhaps slightly longer and narrower,—those that I have already described under *G. sinensis*. They are much elongated ovals, more or less pointed towards one end, with a dingy greenish white chalky exterior coat, which becomes more and more sullied as incubation proceeds, and beneath this the real shell of a somewhat pale greenish blue tint. The chalky covering, as in other eggs of this family, is easily removed by scraping, and even in nature is generally more or less worn off a larger or smaller portion of the surface.

In length the eggs vary from 1·95 to 2·29, and in breadth from 1·28 to 1·46; but the average of sixteen eggs is 2·13 by 1·37.

FINIS.

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